COAL AGE

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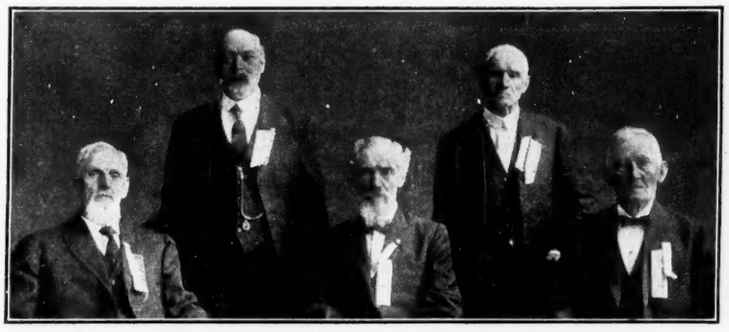
The Long Life of Coal Miners

That the life of the miner is laborious but is not unhealthy is proved by the large number of old men in and around the mines, many of whom started work long before what is now the legal age. The risks of accident seem to be more than overbalanced by the immunities from disease.

For many years imagination peopled the mines with "noxious humors." The mine current was considered as harmful as night air—an atmosphere to be shunned. Meanwhile the miners throve in it. It is only recently that analyses have proved it free from bacteria and reason has pointed out that its temperature in its degree and equability is such as to produce the best conditions for the development of unfailing health. Like night, mountain and sea air the atmosphere of the mine is now vindicated even though its healthfulness has not yet been extolled.



VETERAN ANTHRACITE MINERS OF WILKES-BARRE, PENN.

Mark Ford has recalled that at the Washington colliery in England six of the men died at an aggregate age of over 438 years. Thus the men reached an average of over 73 years.

But this record is bettered by the five men in the picture from the William Penn colliery of the Susquehanna Coal Co., Wilkes-Barre, Penn. In 1912 they were still living and working and the average of their ages was nearly 73 years. On his feet on the left is Charles G. Palmer, a miner then at that age. This man had been with the company 41 years. He has recently died at the ripe old age of 75. Standing at his side is Philip H. Jones, a fireboss, aged 73 years. He had been on the rolls of the company for 41 years. Seated from left to right are William Jones, Sr., a miner aged 75 years, service 44 years, William J. Selzer, shipper, age 68 years, service 32 years, and James Malloy, miner, age 73, service 43 years.

At the series of examinations on the mine law in progress among the employees occupying responsible positions in the mines of the Susquehanna Coal Co., each man was asked how long he had been in its employ. Only three of the five divisions have so far reported. In these, one man had been with the company for 50 years, one for 48 years, 16 for over 40 years, 47 from 30 to 40 years, and 96 from 20 to 30 years. It should be remembered that the foregoing figures refer to the service of these men with the Susquehanna Coal Co. alone, and that most of them had worked additional years in the mines elsewhere.

In the Shamokin division the average length of service of 140 men was just short of 19 years; in the Wyoming division 63 men had served an average of nearly 25 years; and in the Lykens division 59 men had been in the employ of the company for $24\frac{3}{4}$ years.

Some of the longevity of the Susquehanna men may be due in part to the healthfulness of the anthracite region, situated as it is in a temperate clime and at a considerable elevation, but much is also due to the hardiness which the mine worker derives from his work and to the healthfulness of the atmosphere in which he performs his labor.

Coal Preparation in Oklahoma

By George M. Brown*

SYNOPSIS—Oklahoma produces about 3,700,000 tons of coal annually, of which about 2,000,000 tons is prepared for market, while the balance is sold as run-of-mine. Three grades—lump, nut, and a mixture of pea and slack—are ordinarily made. Washing is sometimes resorted to in preparing the small sizes.

Oklahoma is divided into three mining districts. District No. 1 is composed of 27 counties, of which Coal, Latimer and LeFlore produce nearly, if not all, of the coal mined in the district. District No. 2 embraces 26 counties; nearly all of the coal is produced in Pittsburgh County. District No. 3 has only two counties among 22 that produce much coal; these are Haskell and Okmulgee.

The production of coal in Oklahoma from July 1, 1913, to June 30, 1914, was about 3,700,000 tons, according to figures in the state mine inspector's office. The pick-mined coal, or rather the coal shot off the solid, amounted to 3,019,334 tons distributed as follows:

District	Lump	Nut	Pea-Slack	Mine-Run
1	214,141	51,455	101,075	1,097,359
2	379,321	99,411	284,367	358,742
3	43,476	21,394	49,968	318,625
Totals	636,938	172,260	435,410	1,774,726
Percentage	51.2	13.8	35.0	

*526 East Seminole Ave., McAlester, Okla.

The machine-mined coal had a large increase over 1912-1913 and amounted to about 685,000 tons, divided as follows:

District	Lump	Nut	Pea-Slack	Mine-Run
1	58,990	20,000*	21,593	15,964
2	43,977	8,446	23,998	89,787
3	99,768	39,796	67,026	197,127
Totals	202,735	68,242	112,617	302,878

*Estimated.

These figures give the reader an idea of the preparation of the coal as regards trade names. In general the coal is treated as follows:

At most of the larger mines the coal is prepared by passing it over shaker screens. These are generally of two parts, either suspended or resting on rollers, and driven by eccentric shafts from a steam shaker engine. The dip of the screens is from 15° to 20°.

Coming from the mine the coal is dumped into the weigh basket from self-dumping cages, crossover dumps or from the common "tip over" dump, depending on whether the mine opening is a shaft or slope. It is then dumped

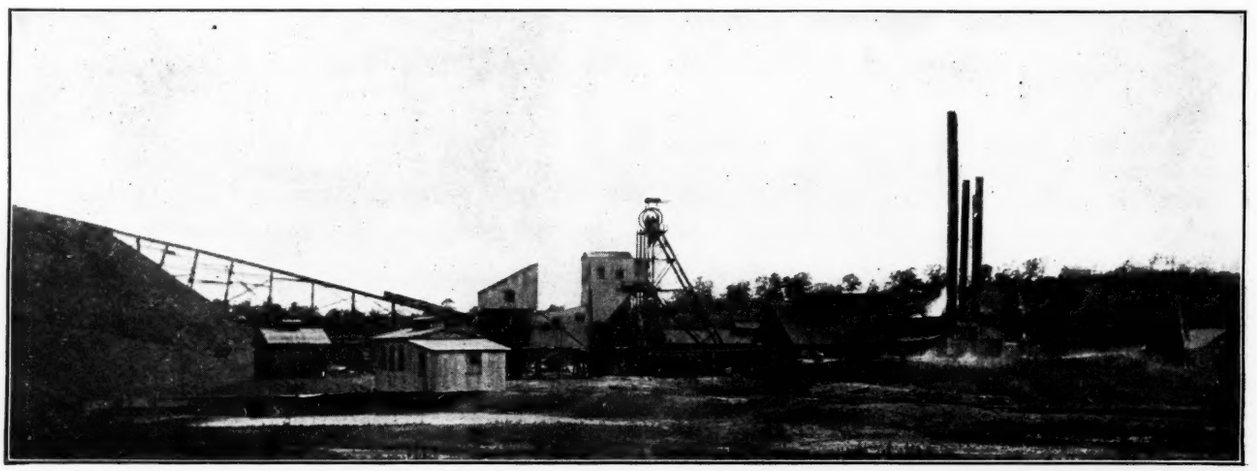


Fig. 1. Modern Plant in Eastern Oklahoma, Mine No. 5, Rock Island Coal Mining Co., at Alderson

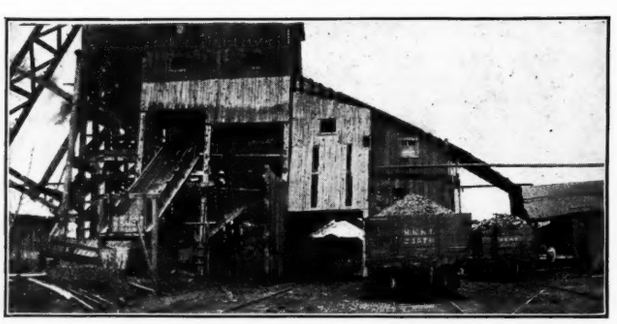


Fig. 2. Loading Arrangements, Mine No. 5, Osage Mining Co., Krebs, Okla.

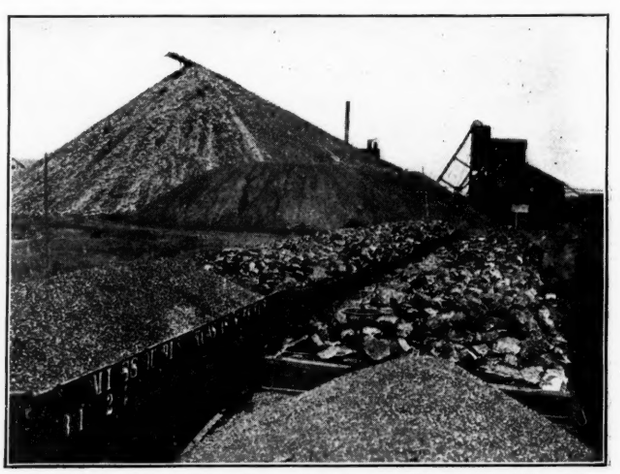


Fig. 3. Some of the Sized Coal from Mine No. 5 at Krebs, Okla.

onto the shaker screen. The sizes of holes and lengths are given in Fig. 6.

Through 5/8-in. perforations, the product is slack coal; and over 5/8-in. and through 1¼-in. perforations, the product is pea coal; over 1¼-in. and through 2½-in. perforations, the product is nut coal; over 2½-in. perforations, the product is lump coal.

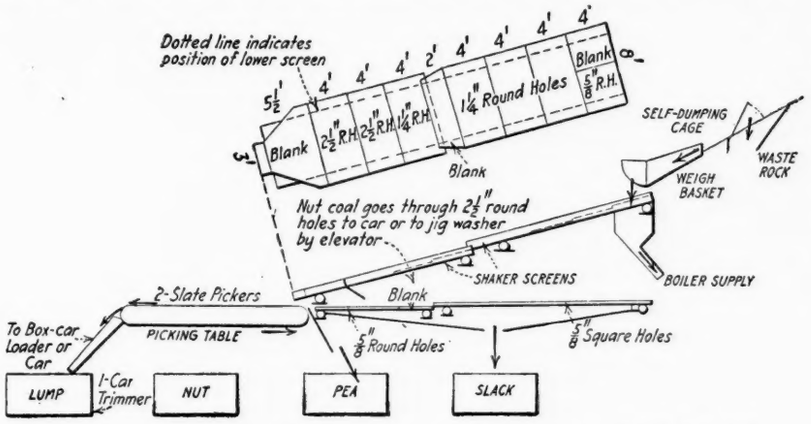


FIG. 4. SCREENING ARRANGEMENT AT MINE NO. 5, ROCK ISLAND COAL MINING CO.

Fig. 6 shows a general practice through the western end of the Oklahoma coal fields. In the eastern portions of the field the coal is generally treated as lump and as mixed nut, pea and slack, giving two sized products only. Where nut coal is separated the slack goes through 1¼-in. screens.

THREE GRADES OF COAL ARE MARKETED

In general there are three grades of coal put on the market: Domestic lump, the slack, pea and nut coal being taken out; commercial lump, the slack and pea being taken out; run-of-mine, all sizes being put into one car. (In some cases I believe there is a limit placed on the amount of allowable slack.)

One of the most uptodate screening plants in the McAlester district is at mine No. 5 of the Rock Island Coal Mining Co., at Alderson.

The shaker screen is divided into two parts, resting on rollers. The upper part consists of four plates about 8 ft. wide and 4 ft. long. The upper plate has one-half blank and one-half perforated with 5/8-in. round holes for boiler supply. The next three plates have 1¼-in. round perforations. See Fig. 4. The second part of the shaker has three plates about 8x4 ft., of which the upper plate has 1¼-in. and the two lower plates 2½-in. round perforations. From here the lump coal passes onto a horizontal picking table, where the slate and shale are picked out. The cleaned lump then goes to the car or the box-car loader.

The nut coal goes directly to the car if necessary, but usually it is sent by elevator to a jig washer. This brand of coal has proven popular.

The treatment of slack and pea is quite novel. All the pea and slack from the 1¼-in. plates on the shaker falls onto a nearly horizontal shaker of two parts. The first part has a 5/8-in. square-hole screen about 24 ft. long. The second part has about 6 ft. of blank screen and 6 ft. of 5/8-in. round-hole screen. The product through the screens is slack; over the screens pea coal of good grade is produced. There are several modern washeries throughout Oklahoma where slack, pea and nut coal are washed. The coal is sized as slack, pea and nut, and in general too much slack in pea or nut causes complaints from the consumer. At the present time only jig washers are in use in the McAlester district, and no attempt is being made to wash coal on a large scale.

Machines are becoming more popular in this field and are having a good effect on the sizes produced. At mine No. 5 of the Osage Coal & Mining Co., at Krebs, three average months of shooting from the solid in 1911-1912 gave these percentages of the various sizes produced: Lump, 53; nut, 12; pea, 5; slack 30. For machine mining in the same mine three average months in 1915 gave these percentages: Lump, 52; nut, 14; pea, 10; slack, 24. More lump could be secured if the miners would use less permissible explosive. They seem to be much averse to breaking up the large lumps.

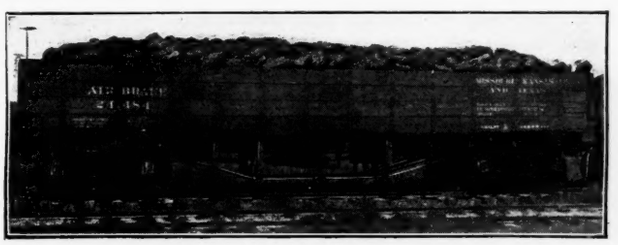


FIG. 5. A CAR OF STEAM LUMP COAL

The writer is indebted to W. A. Evans, general superintendent of the Rock Island Coal Mining Co., and to James Duncan, receiver for the Osage Coal & Mining Co., for permission to use the drawings and pictures shown.

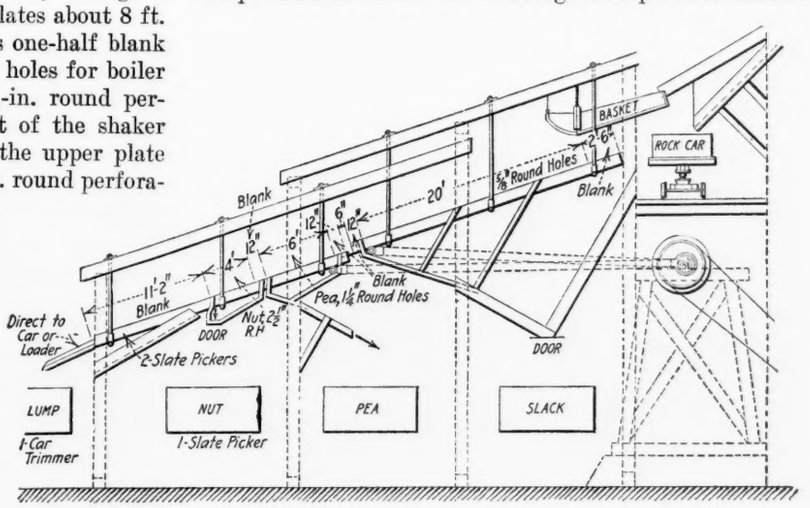


FIG. 6. USUAL ARRANGEMENT OF SCREENS AT THE LARGER OKLAHOMA PLANTS

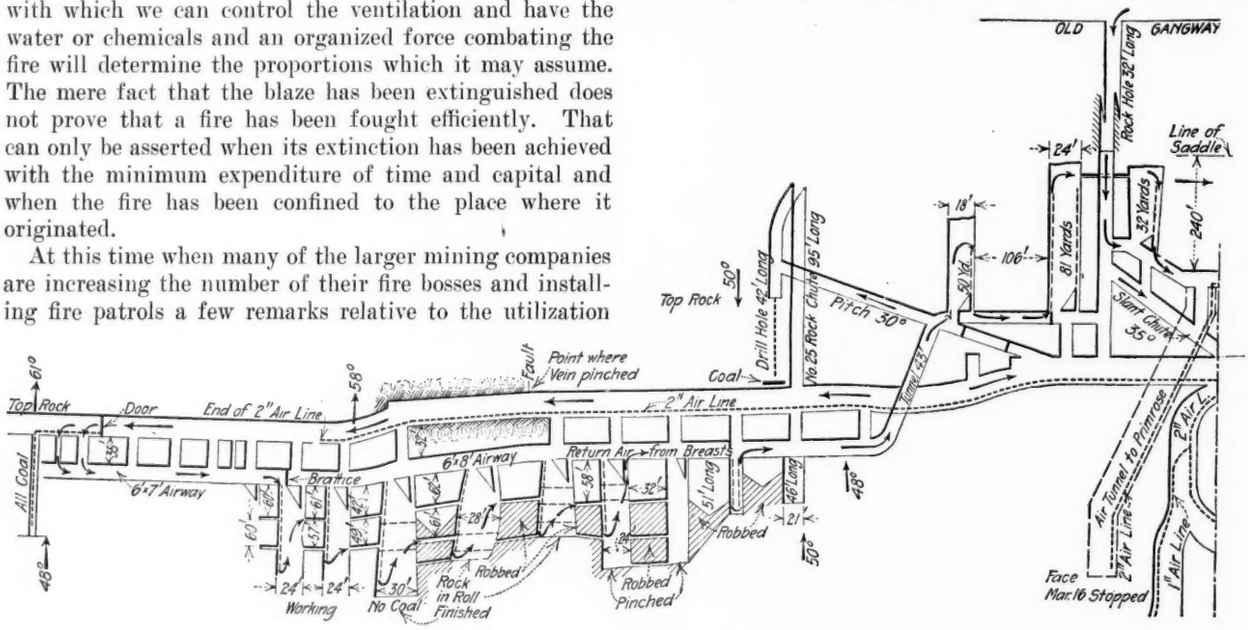
Forestalling Underground Fires at the Lansford Collieries*

By J. McCrystle†

SYNOPSIS—Maps are prepared by the Lehigh Coal & Navigation Co. which show diagrammatically the resources available in coping with fires and the dangers which must be faced. These drawings are not necessarily made to scale.

A mine fire is an ever-present hazard in coal mining, its time, location and cause being always uncertain. Constant vigilance must be maintained at all times, and the ability to fight it successfully will for the most part depend upon the degree of preparedness and upon the preliminary measures that have been taken. The promptness with which we can control the ventilation and have the water or chemicals and an organized force combating the fire will determine the proportions which it may assume. The mere fact that the blaze has been extinguished does not prove that a fire has been fought efficiently. That can only be asserted when its extinction has been achieved with the minimum expenditure of time and capital and when the fire has been confined to the place where it originated.

At this time when many of the larger mining companies are increasing the number of their fire bosses and installing fire patrols a few remarks relative to the utilization of local conditions and on the means of increasing the efficiency of the fighting force may be pertinent.



A Rough Diagrammatic Sketch of a Section of the Mines with Numerous Extensions and Annotations

Importance of First Steps

In the early stages following the discovery of fire, there is always a certain amount of excitement. When the foreman or superintendent arrives, it is imperative to organize the men in the vicinity at once and probably necessary to send for others. There may be a force already on the ground sufficiently large for the work to be accomplished, but the men not having been selected are probably not reliable or otherwise unsuited for fire fighting. The man in charge will first make it his duty to see that no workmen remain in places traveled by return air from the fire. He will have to regulate his ventilation, procure pipe or hose to carry the water, and decide where to make his hose connections. These and innumerable other details will have to be arranged immediately upon his arrival. In the majority of cases the foreman is the only one intimately conversant with the entire ventilating system, the only person who knows the location of the fire-fighting apparatus and water lines, and should he make a bad decision or become injured the fire may have an opportunity to extend beyond the point where fighting it by direct methods will be of avail. A few well-directed efforts in the incipient stages of the fire will be of more consequence than thousands spent later.

The "boss" is the natural leader of the emergency squad. If he is experienced he will appreciate that it is necessary to say "Come, boys" instead of "Go, boys." It will be his work to allay the fears of his squad and to imbue the men with confidence. His usual place is right on the firing line, and he is frequently one of the first to be overcome.

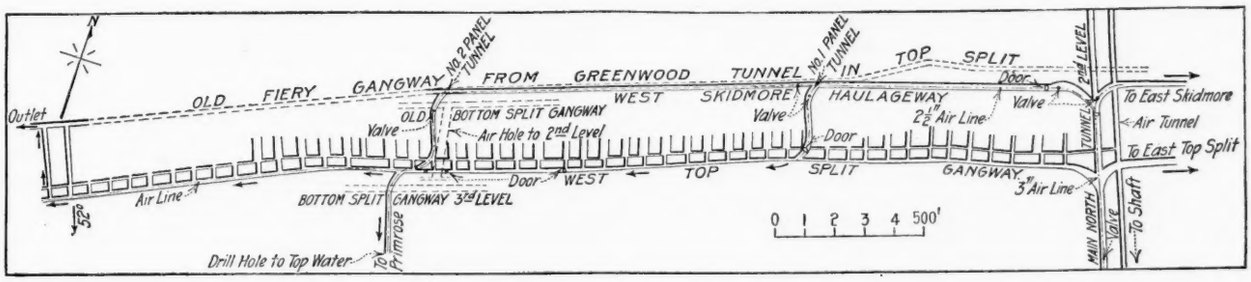
In three cases in my own knowledge the foreman has been scalded by the steam resulting from a too-zealous application of the water, thus leaving the fire squad without a leader.

Formulated Rules for Fire Fighting

To eliminate delays, to insure that everyone will work in conjunction and will play his part, to have dependable men immediately available for combating the fire, to remove as many decisions as possible from the excitement of the moment, so that the right thing will be done the first time, the Lehigh Coal & Navigation Co. has anticipated the possibility of fires in the various underground workings of the western division and has organized a committee of the colliery officials to formulate rules for fighting them. In other words, it has assumed a fire to have

*Paper read at Tamaqua division meeting of the Panther Valley Mining Institute.

†Division engineer, Lehigh Coal & Navigation Co., Lansford, Penn.



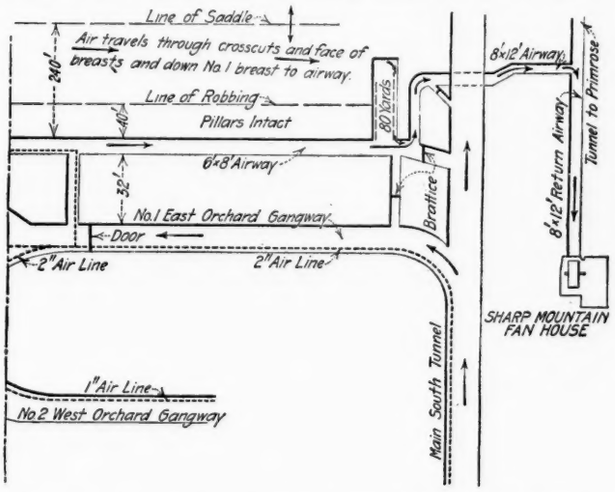
A Map Prepared to Exhibit the Fire-Fighting Possibilities in a Mine Level

started in possible places in each vein and has then adopted fire rules.

These regulations, however, do not embrace a policy for fighting a fire that has gained headway, but cover only the work from the time of the discovery of a fire until water is applied or the higher officials arrive. The preliminary work thus performed may be said to bear the same relation to a fire as "first aid" does to an injury.

Sketches Furnish a Visual Record of Situation

To facilitate and simplify this work, sketches have been made to scale of each of the several fireboss districts, show-



Made by the Fireboss for Fire-Fighting Purposes

ing the workings, the location of the doors and regulators, the air line and valve, the location of the fire apparatus and anything that would have any bearing on a possible fire. The sketches and instructions are of such size as to be readily carried in the pocket. Each fireboss has a set of his individual district, while complete sets are kept at each fireboss' "shanty" and at the foreman's, superintendent's and fire inspector's offices. The sketches are revised as often as necessary to conform with the changes in the ventilation, the erection of doors, the extension of air lines, etc.

Further, each fireboss has a pitch plan drawn by himself of his own territory showing the length of the breasts and pitch, the headings, ribs, thickness of coal, condition of roof and manways, and any data that would have any bearing on either a probable fire or future mining. These are but picture sketches, and no attempt is made to have them to scale. The value of these picture plans when an effort is being made to cut off or get a heading above the fire can be readily realized.

A map of the entire colliery showing the complete air system, air lines, valves and water lines accompanies the foreman's, superintendent's and fire inspector's sketches. The sketches further allow the fireboss to follow the rules graphically; they enable the higher officials who probably are not familiar with the details of the workings to grasp the situation readily, and if anything should happen to either the foreman or fireboss the sketches would reproduce information that otherwise would undoubtedly be unobtainable.

All Air and Water Lines Are Connected

In most large anthracite mines, particularly those having any rock work in progress, compressed-air lines are found following many of the gangways. These may be used for fighting fires and may be rendered readily available beforehand by making connections between them and the water-line, these connections being controlled by valves. Should no pipe be laid in the gangway in question, it may be found more expedient to tear up the pipe in another gangway and relay rather than to wait for other pipes to be brought in from some other source.

When placing doors and brattices, their use in an emergency is now carefully considered. Formerly the ventilating needs were alone regarded as important. In all air lines laid recently, tees, unions and valves have been placed at short intervals, so that the line may be broken with minimum trouble and the hose connected as near the fire as possible.

The fire committee consists of the superintendent, foreman, fire inspector and engineer. Once-a-month meetings are held at which the firebosses, etc., are questioned regarding rules. Afterwards any alterations made in the air lines or ventilation during the previous month are noted, and any suggested changes or additions to the existing rules are discussed. It will be noted that firebosses, etc., are required to memorize the rules, just as railroad employees are instructed to commit to memory the regulations prepared by the transportation companies for which they work. No reference to the instructions should be necessary during an emergency.

In preparing the fire rules a separate study has been made of each gangway or section. The first steps to be taken are then discussed and finally embodied into a set of rules to govern each condition.

In this way the responsibility is to a large extent removed from the shoulders of the foreman and a deliberate policy is substituted for the snap judgment made under excitement. While everyone covered by the rules has his own individual part to perform, the whole force is coördinated so as to do team work.

The first rules for fire service refer to the removal from danger of any workmen likely to be affected and explain

the most expedient way of getting them out in safety. Then follow rules for cutting off the air, allowing just enough to clear away the smoke, and in these clauses the various doors and regulators required are designated. Should the fire be discovered at night or while the fireboss is making his inspection in the morning, the foreman and fireboss must be informed. A good telephonic system is installed everywhere, connecting all parts of the collieries inside and out. Thus the man who discovers the fire can notify the engine house or fan house as soon as the ventilation has been regulated. There is always someone on duty at those places. He should be informed as to the extent and location of the fire. He in turn telephones to the foreman and superintendent, leaving the fire or nightboss to turn his attention wholly to the fire.

The valves are then adjusted so as to carry water to the site of the fire, the compressed air being shut off and the water turned on. Long before a fire occurs the foreman has prepared a list with the addresess of men on whom he can depend and on whom he will probably have to call for assistance. A subordinate to whom the list has been intrusted can readily summon these men on demand.

Recently the company has added to the book of fire rules data and tables which may prove valuable to the possessor in the performance of his various duties. He is required to familiarize himself with these and to become proficient in their use.

Since rules and monthly meetings have been introduced interest has been reawakened in subjects that usually are forgotten as soon as the certificate as mine foreman is granted; the precautions for the prevention of fire are being more closely observed, and there is apparent a general improvement in the work and morale of all concerned.

Extracts from a Superintendent's Diary

Again and again I am reminded of the fact that a man's point of view is largely governed by his experience. Today, for example, I made my final decision upon the purchase of a new ventilating fan for our No. 3 mine, and in choosing the fan, to meet the requirements as I saw them, I had to disregard the recommendations of our electrical engineer as well as our master mechanic.

They preferred a small high-speed fan of high efficiency and low cost, direct-connected to a motor with a rating slightly in excess of our maximum requirements. Their experience with alternating-current motors had taught them that motors of that type give highest efficiency when operating close to their rated capacity, and being engineers, primarily, efficiency and cost received first consideration with them.

My experience had taught me that there are times when it is very necessary to speed fans up far beyond their regular capacity, and if one has a large fan running below its rating that is a simple matter; but if one has a fan and motor working on regular duty to maximum capacity a sudden unexpected demand furnishes a serious problem. After a discussion, in which I gave them the benefit of my information, they came to agree with me and withdrew their recommendations.

There was a time when I considered it beneath my dignity to act on suggestions volunteered by my subordinates, but in looking back I realize now that they were well qualified to offer me suggestions then, as my experience up to that time had not given me a vision much broader than their own. Now, however, the question of dignity would not hold me back for a moment, but as a matter of fact I seldom receive suggestions from my employees that are worthy of much consideration because with my broader vision I see so many obstacles that have never occurred to them.

In this connection I am always reminded of a little story one of my mine foremen tells about one of his drivers, a little colored boy.

Sam was given a mule to drive with a run extending the entire length of a cross-heading, and he had to deliver his cars to a side track, from which the loads were handled by electric locomotives. In giving him his instructions, the boss driver failed to warn Sam about the danger of entering the side track with loads when the switch light showed red to indicate that the current was on.

On his first trip, when Sam arrived at the side track with his loads, his mule seeing the red light refused to pull the cars into the siding. Sam could not understand.

He got down from the cars and began to remonstrate with the mule something after this manner: "Say there, yo' fool mule, what yo' stallin' 'bout? Yo' bettah go long now an' tend to business for I'se seized wid a peevish feelin'; yo' can't temporize wid me, dat yo' can't."

Still the mule stood still, so Sam got busy with his lash. The mule remained as stubborn as before. Then the locomotive passed along the main entry and the red light turned white. Immediately the mule started off and pulled into the siding. Sam deliberated over the performance for a few moments, and the mystery cleared. Then he reached up and patted the mule on the head.

"Say, ole mule, 'pears lak de wrong thinking machine wus put in charge of dis yere outfit," was the way he worded his apology to the mule. Pretty good illustration of what sometimes happens when brains attempt to dictate to experience.

Personnel of the West Virginia Coal Association

The names of the executive committee of the West Virginia Coal Association are as follows, the committeemen and alternates being given in their respective order:

Fairmont district, C. H. Jenkins, R. B. Isner; New River district, G. H. Caperton, S. A. Scott; Pocahontas district, W. D. Ord, L. E. Tierney; Tug River district, George Wolfe, A. B. Rawn; Thacker district, T. E. Houston, F. L. Schoew; Guyan district, A. R. Bisel, J. J. Ross; Kanawha district, J. W. Dawson, E. O. Dana; Wheeling district, J. C. McKinley (no alternate); Chesapeake & Ohio Shippers' Association, William Puckett, Quin Morton; Independent Operators, J. G. Bradley, George Wolfe.

The officers of the committee are as follows:

J. W. Dawson, chairman, Charleston, W. Va.; C. H. Jenkins, vice-chairman, Fairmont, W. Va.; A. H. Land, treasurer, Barbourville, W. Va.; W. H. Cunningham, secretary, Huntington, W. Va.

The general offices of the company are in the Robson-Prichard Building, Huntington, W. Va.

Life Tenant's Right to Dispose of Coal.—One who merely owns a life interest in land has no right to sell coal underlying the tract, although he may take reasonable use of the same for domestic purposes. (Kentucky Court of Appeals, McCoy vs. Ferguson, 175 Southwestern Reporter 23.)

An Eastern Preparation Plant

By W. R. Ourand*

SYNOPSIS—A West Virginia plant in which has been embodied apparatus for a fuel preparation which is decidedly in advance of present market requirements.

The Harty Coal Co. was recently organized to develop coal properties on the Virginian Ry. in Wyoming County, just east of Mullens, W. Va. This coal lies in the northeastern corner of the Pocahontas field on the headwaters of the Guyandotte River.

The coal produced on the Virginian Ry. comes principally from the Winding Gulf Branch in the New River field or from points farther west and is hauled eastward through Clark's Gap in the Flat Top Mountains to points along the Atlantic seaboard. Shipments from the great loading plants at Sewall Point and at other seaboard piers and local railroad consumption constitute the immediate field for disposal of these coals.

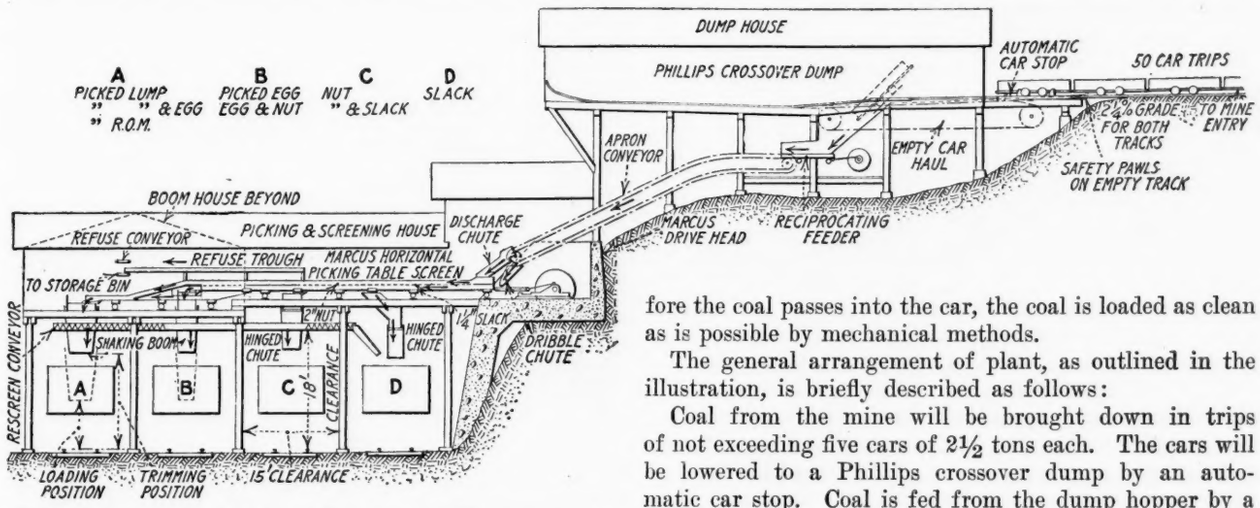
For this reason coal at the mine is loaded into railroad cars for shipment with little or no effort to produce either a high percentage of lump or sized coal or to pick out slate or other foreign matter. It is probable that efforts to prepare a more uniform fuel will not be extensive in this section until other outlets are secured. An improved preparation of coal for shipment will then be required similar to that now being made at the mines in other West Virginia fields supplying the domestic trade in neighboring states.

However, in anticipation of new markets and in advance of similar means of preparation in this locality, the Harty Coal Co. has equipped its new operation with the most modern picking and screening machinery, and is prepared to produce four sizes of coal—picked lump, picked 4-in. egg, and picked 2-in. nut and 1¼-in. slack—together with picked run-of-mine or any other usual combination of sizes.

*Assistant engineer, Roberts & Schaefer Co., Chicago, Ill.

On account of the somewhat soft and friable nature of the coal, less strenuous methods of mining are to be attempted, so that the larger sizes of coal will be produced in a greater percentage than at present. The tipple equipment is designed with the idea of reducing breakage to the minimum and permitting the full percentage of larger sizes produced to be loaded into cars.

To this end the new type of shaking loader boom is installed for the lump and egg coals. In addition to providing an easy descent and perfect trimming of the car, this boom assures an extra-high-class product by its ability to rescreen any fine coal made in the preparation of the larger sizes. As this rescreening is done just before the coal passes into the car, the coal is loaded as clean as is possible by mechanical methods.



General Arrangement of Tipple and Preparation Plant

The general arrangement of plant, as outlined in the illustration, is briefly described as follows:

Coal from the mine will be brought down in trips of not exceeding five cars of 2½ tons each. The cars will be lowered to a Phillips crossover dump by an automatic car stop. Coal is fed from the dump hopper by a reciprocating feeder delivering to an apron conveyor, which lowers it to the horizontal picking table screen, on which it is picked and separated into the desired sizes. The refuse removed is discharged into a conveyor without need of rehandling and is deposited in a storage bin.

The Mine-Car Storage Yard

The mine-car storage yard leading from the mine entry is arranged with both loaded and empty tracks on a common grade sloping at 2¼ per cent. toward the dump. This necessitates an empty car haul capable of pushing 50-car trips up this grade. Provision is also made with safety pawls for holding this trip on this adverse grade until it is picked up and hauled back into the mine by the locomotive.

The tipple structure over the railroad tracks is arranged for rather unusual conditions because of the requirements of the railroad. A minimum clearance of 18 ft. above the top of rail and a lateral clearance on each track of 15 ft. are given for the permanent structure in addition to arranging all equipment so that it may be raised entirely out of these minimum clearances.

This arrangement permits the Virginian Ry., which has only a single track at this point, to utilize all tipple yard tracks when necessity demands. The plant was designed and the equipment supplied by the Roberts & Schaefer Co., of Chicago, the installation being directed by J. C. Sullivan, manager of the Harty Coal Co.

Efficient Tipple Arrangement

By R. G. Read*

SYNOPSIS—Details of an installation designed to thoroughly screen a large tonnage at a very small labor and maintenance cost with a minimum initial investment.

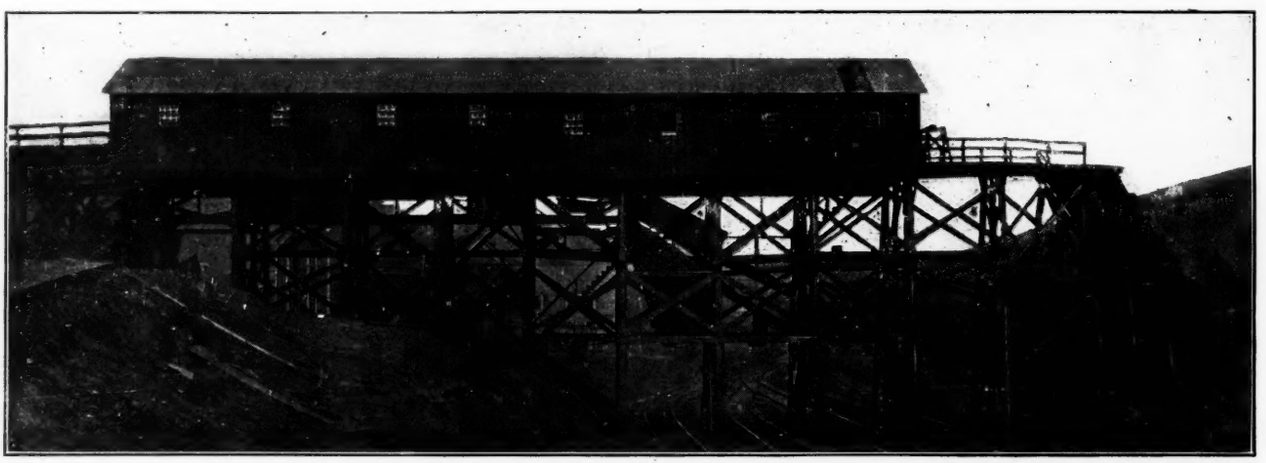
The operations of the Maryland Coal Co. of West Virginia are located at Wendel on a branch of the Baltimore & Ohio R.R. leaving the Parkersburg division at Simpson. The tipple at No. 1 mine is of the usual gravity screen type where the coal is dumped directly into a chute leading to the screens. Owing to the fact that the impurities exist in this coal largely in the slack or very fine sizes it was found necessary to resort to some more efficient means of screening, and in the No. 2 tipple this fact was recognized and given special consideration. As the coal from this mine is used largely in the lake trade, no special sizing of the coal is required, and the use of shaking screens was not considered necessary, although it was at first thought that the final separation between nut and slack would have to be made in this manner.

The equipment as it was installed is shown in the accompanying illustration. The coal is brought in 50-car trips to the tipple, the locomotive is then run around and the trip backed onto the car-haul or rather coupled to the three cars which are left standing over the car-haul. This method of operation obviates the necessity of using any form of knock-over or spring-dog or spur on the car-haul. The car-haul feeds the cars to the dump at a uniform rate of five cars per minute, each car being pushed over a slight knuckle which allows it to settle back so as to allow the coupling pin to be easily removed, after which the forward movement of the trip pushes the car over the knuckle, from which point it runs by gravity over the scales and into the Phillips crossover dump. An automatic device opens the door as the car is being dumped. (For description of this device see article by Elkins Read, Coal Age, p. 434, Mar. 14, 1914.) The scales are equipped with a printing beam which automatically records the weight of each car, so that the dumping and weighing of the coal are done practically without labor.

The coal is dumped into a hopper having a capacity of two cars, from which it is fed by means of a motor-driven reciprocating feeder. This is provided with adjustable crank disks so as to vary the rate of feed by changing the stroke. The coal passes from the feeder plate to the dead plate of the screen.

Screening Equipment

The screening equipment consists of two gravity bar screens. The upper screen is 8 ft. wide and 16 ft. long, made in sections with 4-in. drop to turn the coal over. The bars are spaced for 1½ in. clear opening and are of the Akron type. Veil plates in sections are provided for making run-of-mine coal. The lower screen is 8 ft. 6 in. wide, and 16 ft. long and the bars are spaced for ¾ in. clear opening.



Maryland Coal Company's Tipple, Simpson, W. Va

The lump coal is loaded by means of a spiral pipe chute with necessary counterweighted apron extensions for loading high and low cars. The chutes are so arranged that the nut coal can be loaded separately or with the lump to make ¾-in. lump coal, or it may be loaded with the slack. The slack is loaded through a hopper with drop-bottom gate, which acts also as a trimming plate.

The car-haul in connection with the feeder makes it possible to handle a very large tonnage with a small hopper. This reduces breakage. The coal being delivered to the screens at a uniform velocity never attains the high speed which is so objectionable in an equipment where the coal is dumped directly onto the screens, and consequently the breakage is materially reduced. A careful investigation has proven that no appreciable breakage results from dumping the coal into the small hopper.

The results accomplished by this equipment justify the belief that a similar outfit can be used to advantage in a great number of places where the conditions call for a thorough screening of a large tonnage at a very small labor and maintenance cost with a minimum initial investment.

*Contracting engineer, Fisher Building, Chicago, Ill.

The Electric Mine Locomotive and Its Motor Equipment

By R. R. Dunlop*

SYNOPSIS—Tables are here presented that show the drawbar pull and haulage capacity of various weights of locomotives on level track and on grades up to 10 per cent. when equipped with either cast or steel-tired wheels. These figures are sufficiently accurate for all commercial purposes.

Numerous articles have been written regarding the procedure of selecting the proper weight of locomotive for a given haul, but most of the methods offered are complicated and involve the use of formulas and characteristic curves. These may be appreciated by a few engineers, but not by the average mine manager or foreman, whose time is usually occupied and for whose use data must be brief and to the point.

For the purpose of providing a simple and practical method of selecting the proper weight locomotive for a given duty, I offer Tables A and B, which show the haulage capacity of mine locomotives when equipped with chilled-tread cast-iron wheels and steel-tired wheels.

TABLE A. HAULAGE CAPACITY OF ELECTRIC MINE LOCOMOTIVES EQUIPPED WITH CAST CHILLED WHEELS

This table gives the drawbar pull in pounds and the haulage capacity in tons for a given weight of locomotive on various grades, when equipped with chilled cast-iron wheels. A co-efficient of friction of 30 lb. per ton has been assumed on level track, and 20 lb. per ton for each per cent. of grade.

Grade	Level		1%		2%		3%		4%		5%		6%		7%		8%		9%		10%	
Loco. Wght., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons
3	1200	40	1140	23	1080	15	1020	11	960	9	900	7	840	6	780	5	720	4	640	3	600	2
4	1600	53	1520	31	1440	20	1360	15	1280	12	1200	9	1120	7	1040	6	960	5	880	4	800	3
5	2000	67	1900	38	1800	26	1700	19	1600	15	1500	11	1400	9	1300	8	1200	6	1100	5	1000	4
6	2400	80	2280	45	2160	31	2040	23	1922	17	1800	14	1680	11	1560	9	1449	7	1320	6	1200	5
7	2800	93	2660	53	2520	36	2300	25	2240	20	2100	16	1960	13	1820	11	1680	9	1540	7	1400	6
8	3200	107	3040	61	2880	41	2720	30	2560	23	2400	18	2240	15	2080	12	1920	10	1760	8	1600	7
10	4000	133	3800	76	3600	51	3400	38	3200	29	3000	23	2800	19	2600	15	2400	13	2200	10	2060	9
12	4800	160	4560	91	4320	62	4080	45	3840	35	3600	28	3360	22	3120	18	2880	15	2640	13	2400	10
13	5200	174	4940	98	4680	67	4420	49	4160	38	3900	30	3640	24	3380	20	3120	16	2860	14	2600	11
15	6000	200	5700	114	5400	77	5100	57	4800	43	4500	35	4200	28	3900	23	3600	19	3300	16	3000	13
17	6800	226	6460	129	6120	87	5780	64	5440	49	5100	39	4760	32	4420	26	4080	21	3740	18	3400	15
18	7200	240	6840	136	6480	92	6120	68	5760	52	5400	41	5040	34	4680	28	4320	23	3960	19	3600	16
20	8000	267	7600	152	7200	103	6800	75	6400	58	6000	46	5600	37	5200	31	4800	27	4400	21	4000	17
25	10000	330	9500	190	9000	118	8500	95	8000	72	7500	58	7000	46	6500	38	6000	32	5500	26	5000	22
30	12000	400	11400	227	10800	156	10200	113	9600	87	9000	70	8400	56	7800	46	7200	38	6600	32	6000	26

TABLE B. HAULAGE CAPACITY OF ELECTRIC MINE LOCOMOTIVES EQUIPPED WITH STEEL-TIRED WHEELS

This table gives the drawbar pull in pounds and the haulage capacity in tons for a given weight of locomotive on various grades, when equipped with steel-tired wheels. A co-efficient of friction of 30 lb. per ton has been assumed on level track, and 20 lb. per ton for each per cent. of grade.

Grade	Level		1%		2%		3%		4%		5%		6%		7%		8%		9%		10%	
Loco. Wght., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons	Draw-bar Pull, lb.	Haul-age Cap., tons
3	1500	50	1440	29	1380	20	1320	15	1260	12	1200	9	1140	8	1080	6	1020	5	960	4	900	4
4	2000	70	1920	39	1840	26	1760	20	1680	15	1600	12	1520	10	1440	8	1360	7	1280	6	1200	5
5	2500	84	2400	48	2300	33	2200	24	2100	19	2000	15	1900	13	1800	10	1700	9	1600	8	1500	6
6	3000	100	2880	58	2760	39	2640	29	2520	23	2400	18	2280	15	2160	13	2040	11	1920	9	1800	8
7	3500	117	3360	67	3220	46	3080	34	2940	27	2800	22	2660	18	2520	15	2380	12	2240	11	2100	9
8	4000	133	3840	77	3680	53	3520	39	3360	30	3200	25	3040	20	2880	17	2720	14	2560	12	2400	10
10	5000	167	4800	96	4600	66	4400	49	4200	38	4000	31	3800	26	3600	21	3400	18	3200	15	3000	13
12	6000	200	5760	115	5520	79	5280	59	5040	46	4800	38	4560	30	4320	25	4080	21	3840	18	3600	16
13	6500	216	6240	126	5980	85	5720	63	5460	50	5200	40	4940	33	4680	27	4420	23	4160	20	3900	17
15	7500	250	7200	144	6900	99	6600	73	6300	57	6000	46	5700	38	5400	32	5100	27	4800	23	4500	19
17	8500	283	8160	163	7820	112	7480	83	7140	65	6800	52	6460	43	6120	36	5780	30	5420	26	5100	22
18	9000	300	8640	173	8280	118	7920	88	7560	68	7200	55	6840	45	6500	38	6120	32	5760	27	5400	23
20	10000	333	9600	192	9200	132	8800	98	8400	76	8000	62	7600	51	7200	42	6800	36	6400	30	6000	26
25	12500	416	12000	240	11500	164	11000	122	10500	96	10000	77	9500	64	9000	53	8500	45	8000	38	7500	32
30	15000	500	14400	287	13800	197	13200	146	12600	114	12000	92	11400	76	10800	63	10200	53	9600	46	9000	39

The drawbar pull of the locomotives listed in Table A is arrived at as follows:

A locomotive equipped with cast-iron wheels will, on a level track, develop 400 lb. per ton drawbar pull before the wheels slip. The drawbar pull of a locomotive equipped with cast-iron wheels will decrease 5 per cent. for each per cent. of grade, as this per cent. of drawbar pull is necessary for hauling the locomotive itself up the grade.

Referring to Table A, it will be noted that a 10-ton locomotive will develop 4000 lb. drawbar pull on a level track and will only develop 75 per cent. of this drawbar pull on a 5-per cent. grade, or, in other words, the drawbar pull is decreased 25 per cent., or 5 per cent. for each per cent. of grade.

It will be noted also that the haulage capacity of all locomotives shown in Table A and Table B is determined by assuming a resistance of 30 lb. per ton of load for level track and 20 lb. per ton additional for each per cent. of grade.

Referring to Table A a 10-ton locomotive will haul 133 tons on level track and on a 5-per cent. grade it will haul 23 tons. In other words, 4000 lb. is divided by 30 on a level track and 3000 lb. is divided by 130 on a 5-per cent. grade.

Referring to Table B a 10-ton locomotive will develop 5000 lb. drawbar pull on a level track and on a 5-per cent. grade it will only develop 80 per cent. of this drawbar pull, or 4000 lb. On a level track 167 tons can be hauled, which equals 5000 divided by 30, and on a 5-per cent. grade 31 tons can be hauled, which is equal to 4000 divided by 130.

The use of these tables will permit of the selecting of the proper weight of locomotive for a given train load on various grades with sufficient accuracy for all practical purposes.

*Jeffrey Mfg. Co., Columbus, Ohio.

Where a grade is to be negotiated in a given haul and the locomotive, with its train, is under headway before reaching the grade, larger train loads can be hauled than shown by the figures given in the tables. Where the grade is of any considerable length or where the train is to be started on a grade, the figures in the tables should be used as a basis in selecting the proper weight of locomotive.

In Regard to Motor Equipment

A locomotive should be equipped with motor capacity sufficient for developing the rated drawbar pull without reaching normal full load on the motors. By a normal full load is meant the one-hour rating, temperature rise not to exceed 75 degrees.

Calculated motor capacity for a given duty may indicate the capacity for that particular duty, but suppose the duty for that particular locomotive should be increased within the limits of drawbar pull for such a machine, what then? Is it not more practical for a manufacturer to determine from installations of various motor equipments which size to use on a given weight of locomotive? The reputation of the manufacturer is made or lost by the record of performance of his product.

The determining of the proper sized motor equipment for a given weight of locomotive is not a complex problem or one which the manufacturer is required to split hairs over unless he is inclined to give as little for the money received as possible and run the risk, sometimes, of giving too little.

There are thousands of locomotives in use in this country, and a study of these equipments will show that locomotives supplied with motors having a capacity of 10 hp. per ton and geared to drive the locomotives at six miles per hour are first-class equipments and amply large for any weight of machine. Such equipments will take care of practically any duty within the capacity of the given weight locomotive.

When the speed of the locomotive must be more than six miles per hour, the horsepower per ton rating of the motors should be increased not less than in direct proportion to the increase in speed.

All first-class manufacturers have motor equipments embodying high continuous capacity, and if sufficiently large motors are used for a given weight of locomotive, as outlined above, they will not overheat.

If the motors are too small, ventilation from the outside does little to increase their capacity because the motors are totally inclosed, the motor frames being the only surfaces exposed for radiation.

In any design of locomotive frame there is sufficient ventilation for carrying away the heat that is being dissipated by the outside of the motor frames, rheostats and other parts.

High Coal Prices in Spain

The shortage of coal continues, says a cablegram from the American consul at Seville appearing in *Commerce Reports*, owing to prohibition of exportation from England. The Seville Chamber of Commerce, fearing paralyzation of industries, has requested the government to endeavor to arrange with the British government for lifting the embargo. Prices at Cadiz are $14.50 to $16 per ton for Welsh steaming coal. Certain Spanish steamship lines are increasing freights on account of shortage.

What Operators Think of Ball Bearings

By Arthur V. Farr*

In January of this year the SKF Ball Bearing Co. attempted to ascertain what was the opinion of the coal-mining industry in regard to the use of ball bearings on locomotives. The company conducted a *questionnaire*, mailing approximately 800 letters to the engineers of representative companies, asking six questions about ball-bearing motors.

Forty-three answers were received. The majority of the officials addressed were not able to answer the questions definitely, others made guesses, while some few were able to give the facts with a reasonable degree of accuracy. Practically all the operators who attempted to answer gave opinions which pointed in the same direction, as will be seen from the following.

There was evidence in the answers of a definite interest in these questions and the realization on the part of the mine operators that such definite knowledge would be useful to them in determining the value of ball bearings on their equipments.

The answers indicate that a considerable number of mines have recently put in ball-bearing mine equipment and have not used it long enough to be able to get definite facts and figures. The questions and some of the more definite answers are as follows:

Questions No. 1—(a) What percentage of time are locomotives with plain-bearing armatures out of service owing to armatures striking pole pieces? (b) What proportion of these motors give trouble? Answers—(a) "20 per cent."; "30 per cent." (b) "We have no plain-bearing locomotives; don't want any machinery with plain bearings." "Our data are in favor of ball bearings; 50 per cent."

Ques. No. 2—How much is your total motor-repair bill affected by using ball bearings on the motor armatures? Ans.—"60 per cent." "We are sure there is a large saving." "50 per cent."

Ques. No. 3—What has your experience shown to be the increased life of the gears of motors equipped with ball-bearing armatures? Ans.—"From our experience with plain-bearing mine cars we know there is a large increase." "100 per cent."

Ques. No. 4—How much have motor failures owing to grounds on brush holders, cables and other parts inside of the motors been reduced on account of ball-bearing armatures? Ans.—"80 per cent." "75 per cent."

Ques. No. 5—What difference do you find in the average condition of commutators of plain- and ball-bearing armatures? Ans.—"Condition of commutator 50 per cent. better than plain." "Very good difference."

Ques. No. 6—(a) How much does it cost for lubricant per motor per year for plain-bearing motors? (b) For ball-bearing motors? Ans.—(a) "$8." (b) "$1.80 for ball-bearing motors."

Many of the companies, instead of answering the questions as given, made general statements such as the following:

"Since we have used ball bearings (for over a year) on our locomotives, there have been no armatures on pole pieces yet. Two cases of armature on pole pieces in same period of time on plain bearings."

*SKF Ball Bearing Co., New York City.

"We have no data from which to give exact information, but the four locomotives equipped with ball bearings give us practically no trouble, whereas the eight locomotives with plain bearings give us a lot of trouble and expense."

"In regard to ball bearings will say we find our commutators in better condition, and we have had no armature trouble with either of the two locomotives which we are operating and which are equipped with these bearings. We have three 8-ton locomotives so equipped."

"Our master electrician advises that he is a believer in ball bearings for motors, as he has experienced a great deal of trouble with the plain bearings. It requires a great amount of oil to keep them cool, and the oil soaks the winding and commutator and allows the armature to get down onto the pole pieces."

"So far, our experience with ball-bearing equipment has been satisfactory."

"We are operating practically all sizes and makes of mining locomotives. Our most recent purchases have been locomotives with ball-bearing motors. These have given excellent satisfaction."

It will be noted from these replies how general are the data of the mine operator in favor of ball bearings on locomotive motors. This feeling of the operators is well summarized in the terse reply of one man, who said, "All we can say is that we like the ball-bearing locomotives."

An Appreciation of Successful Management

By an Employee

Just as streams are traced to their sources, so it seems is success or failure in managing industrial concerns nearly always attributed to the management. It takes the full measure of ability, energy and money to operate coal mines and industrial concerns so that the constant returns on the investment will spell success for the stockholders.

Those concerns, both large and small, whose management is broad enough in knowledge of humanity to adopt policies which involve a possible decrease of returns on investment in order to improve the physical, moral and financial conditions of their employees certainly deserve especial credit where this is achieved not only without the criticism but with the full commendation of the stockholders. I think this is particularly true when success of this kind is achieved in a district where broad policies of welfare work have hitherto been virtually unknown.

I think it is a fine thing to work for a company which is continually demonstrating (in good times and bad) that the well-being and best interests of its employees are one of the cardinal principles of its management. It is better yet to see indisputable evidences of the fact that such policies have proven successful; the strongest of these evidences is that public opinion in the district now concedes that the company pursues these policies, not to make money, but because they are right in principle. When public opinion ceases to attribute ulterior motives to a company spending money to improve the conditions of workmen, that company's policies are successfully demonstrated.

Big Concerns Are Not against the Interests of Labor

The company I work for is one of the largest industrial concerns in the South. It operates coal mines and coke ovens and manufactures iron and steel. I must grant it is a big concern—but that does not mean that big companies are the only ones that can do this kind of work, for many smaller ones in the district are following its example. It is unfortunate that our present administration at Washington seems to have the idea that because a business is big it is bad. We have done all we can to show them otherwise so far as our company is concerned. We know that the benefits we enjoy now are due to the present administrative policies of our officials, and we would much regret to go back to former conditions.

In the old days a change in management for our concern simply meant changes in high officials and certain lower ones. To the rank and file it meant nothing more than getting used to new bosses as the result of changes higher up. But when our present administration took hold several years ago, a different atmosphere soon made itself felt. In the few years intervening, the application of new and broader policies has brought to us many desirable things.

What Has Been Achieved

First, safety in the performance of our work. Everywhere "safety first" is recognized and consistently taught. The company provides every safeguard possible, and the men learned long ago that it pays them far more than it does the company to observe safety rules. Accidents of all kinds, especially those which are fatal, have been materially decreased, and for men who are hurt there is a plan of relief.

Second, improved working conditions. Working conditions everywhere have not only been rendered as safe as possible, but everything for the convenience and physical well-being of workmen has been provided, such as pure drinking water (iced in summer), bathhouses, lavatories and toilet facilities. All this is absolutely free to us.

Third, improved living conditions. Most of us live in company houses in towns near the works. These are now screened and fenced. Nearly all of us have gardens, and there are prizes for the best. There are streets and sidewalks, and we have a complete sanitation system, including fly-proof closets. Our drinking water is analyzed frequently to determine its purity; pools and ponds are either drained or oiled; in fact, everything possible is done to take care of the health and well-being of the residents of company towns. As a result sickness has been materially minimized, especially such sickness as is usually caused by the presence of flies and mosquitoes.

Fourth, improved community life. Our state ranks somewhat low in school facilities, but our management has provided excellent school buildings wherever they have been needed, with full equipment and first-class teachers. Special kindergarten facilities are provided for the children. If our wives and daughters want to learn more about cooking and housekeeping, that information is furnished too. There are playgrounds for the children. Churches have been provided also, and the company assists in helping us to keep the church buildings in good condition. A complete health department is maintained, including hospitals and home treatment, cheaper than any of us could secure the same class of service outside.

Fifth, right treatment of employees. It is the fixed policy of our management that the men must be treated right. The "big stick" policy is not countenanced anywhere. We have learned to know that the company has

our best interests at heart. Courteous and fair treatment is the invariable rule. As is natural in the South the negro forms the largest single nationality among our workmen. In the past the negro worker in the South has been too much abused because of a certain natural ignorance and shiftlessness inherent in the race. Our company not only refused to take advantage of its labor in this way, but has done all it can to teach this class in particular the value of a dollar and the advantage of saving it. The company stores are operated, not to make money, but to be of help to the workmen. The drawing of store checks on earnings is discouraged as much as possible and is becoming less frequent all the time. The discounting of checks for cash is prohibited, and our company refuses to be a party to the plan still followed by many coal-mining corporations of issuing store checks and then buying them for cash at a discount.

The Outcome of Liberal Policies

The result of such policies is that hundreds of us are buying and becoming owners of our own homes, and this is one of the best evidences of contented workmen. Wages are good—in fact, higher than ever before in our district. Strikes have become unknown to us. In the old days a strike was a contingency to be expected every year. Now with the spirit of full coöperation prevailing we do not think about such things. There is a profit-sharing system and a pension plan for aged employees.

Summing it up and speaking for myself, I know that I am working for the best concern in our district. Everybody, public and all, concedes that. There is an atmosphere of loyalty all along the line. The outside public feels the same way and recognizes in our company the greatest developer and benefactor of the district.

I know that I am truthfully voicing the sentiment of the great majority of all classes of workmen for our company when I say that this means successful management. It is the kind of management that many concerns in our own district are emulating to the best of their ability, and it is the kind that it will pay every coal-mining concern desiring ultimate success to consider well. In short it is a magnificent dividend producer, for what better dividends can be desired than the knowledge that both men and company understand each other and are working together for a common success.

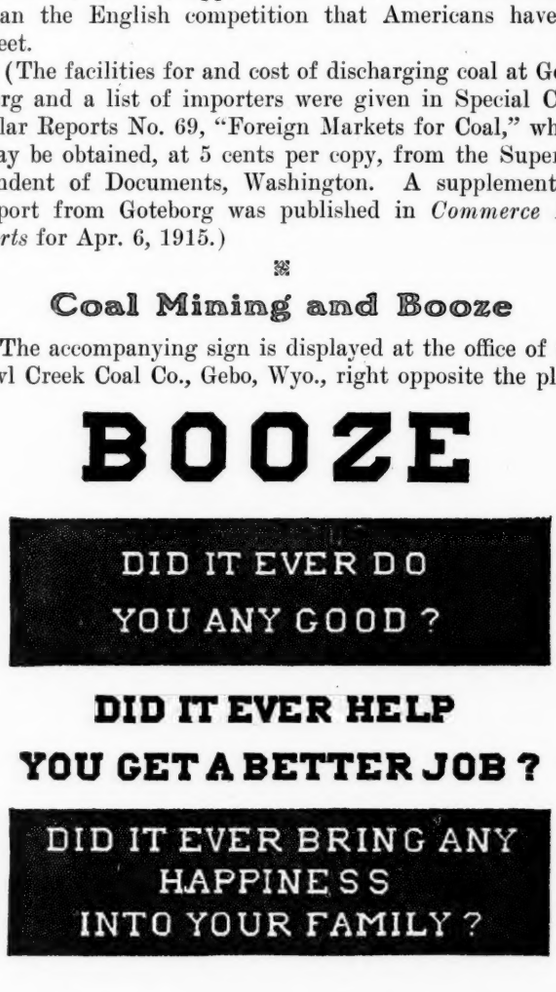
American Coal in Sweden

It was not profitable to import coal from the United States into Sweden during the past autumn and winter, says Consul Emil Sauer, of Goteborg, in *Commerce Reports,* on account of the high freight rates and the fact that exports from England to Sweden were resumed. At present, however, the freight rates from England to Goteborg are more than double what they were during the winter, and rates from the United States to Goteborg have decreased, so that they are little, if any, higher than the rates from England. On account of this fact and the partial export prohibition on English coal, it should be profitable now to ship American coal to Sweden on a large scale. Several Goteborg importers are already communicating with American coal exporters who applied to this consulate for assistance, and the city gas works of Goteborg has just ordered a cargo from the United States. Some German coal has come to Sweden during the last few months, and it appears now to be the German rather than the English competition that Americans have to meet.

(The facilities for and cost of discharging coal at Goteborg and a list of importers were given in Special Consular Reports No. 69, "Foreign Markets for Coal," which may be obtained, at 5 cents per copy, from the Superintendent of Documents, Washington. A supplementary report from Goteborg was published in *Commerce Reports* for Apr. 6, 1915.)

Coal Mining and Booze

The accompanying sign is displayed at the office of the Owl Creek Coal Co., Gebo, Wyo., right opposite the place



where the miners receive their pay. It is about 18x30 in. and is made of a high-grade enamel with alternate stripes of dark blue and red.

An Opinion on the Export Outlook

Hugh L. Kirby, manager of the coal department of the Vernon Metal & Produce Co., is of the opinion that American fuels will soon displace a large tonnage of English coals now being exported to South America. Mr. Kirby has devoted considerable time during the past few years to a study of the export situation, paying attention particularly to New River coal. He has also under way a consolidation of several West Virginia mines.

In his opinion the soft-coal owners should avail themselves of the present conditions brought about by the European war and the embargo on Welsh coal, and inaugurate an aggressive policy. If the export business is developed he believes the problem of overproduction will be largely overcome. He states that American coal can be sold in Rio and Argentine at least $3 cheaper than English coal. The only obstacle in the way is the lack of bottoms and the fact that it costs 60 per cent. more to operate vessels flying the American flag.

A Coal-Traffic Readjustment

An important trackage agreement has been concluded between the Baltimore & Ohio R.R. and the Western Maryland Ry., whereby the latter will have access, with comparatively little construction, to two coal fields off its present lines and will participate in the traffic from a third. This agreement is a sequel to the purchase by John D. Rockefeller of a controlling interest in the Consolidation Coal Co. He already owned control of the Western Maryland Ry.

In the Somerset region of Pennsylvania, the Western Maryland Ry. will construct a short stretch of line extending from a point in Somerset County to a point in Westmoreland County, touching properties of the Consolidation Coal Co. on which new mines are to be opened. To reach this new track the Western Maryland, under the agreement referred to, will use about twenty miles of Baltimore & Ohio R.R. track.

In the Fairmont region of West Virginia, the Western Maryland Ry. will further construct a small mileage of track, in the nature of a mine branch, to serve intended new workings of the Consolidation Coal Co. To reach this the Western Maryland Ry. will use Baltimore & Ohio R.R. tracks for about seventy miles, from its own western terminus at Connellsville, Penn., to Fairmont, W. Va.

In the Cumberland region of Maryland, the Consolidation Coal Co. owns the Cumberland & Pennsylvania R.R., 57 miles long, which brings out approximately 1,500,000 tons of coal annually. This coal has heretofore been turned over to the Baltimore & Ohio R.R., but with the acquisition of an important interest in the coal company by the owner of the Western Maryland Ry., the latter found itself in a position to demand and obtain a division of this traffic.

Baltimore & Ohio Loses Traffic, But Gains Rental

These are the three sources of coal traffic affected by the agreement. In respect only to the last mentioned it is believed that the tonnage of the Baltimore & Ohio R.R. will be materially reduced. The extent to which its revenues will be affected has been authoritatively estimated at $700,000 or $800,000 annually.

The advantage to the Western Maryland, in addition to a share in the tonnage of the Cumberland & Pennsylvania R.R., will be found in its access to new coal fields and the opportunity to serve, exclusively, the new workings of the Consolidation Coal Co. It will be able to do this with a much smaller outlay of capital than would have been required if it had built its own lines through to the Somerset and Fairmont fields.

This agreement is regarded by railroad men as a striking illustration of the modern tendency to avoid duplication of railroad investment by making greater use of existing facilities wherever that is possible. While the Western Maryland Ry. will be saved an expenditure of possibly $8,000,000 to $10,000,000, the Baltimore & Ohio will benefit to the extent of the rental which under the terms of the agreement the Western Maryland Ry. will pay for the use of the tracks.

Of course, the Baltimore & Ohio R.R. will have to face new competition. By conceding the use of its tracks in this manner the railroad has opened the door to such competition, whereas 15 or 20 years ago it would doubtless have followed the custom of fighting the newcomer to the last ditch. The same competition as now would, in all probability, have resulted from such a course and a large expenditure on the part of the Western Maryland Ry. for about 100 miles of duplicate and largely unnecessary railroad would have been necessary. The Baltimore & Ohio R.R., also, would have missed the track rental it is to receive under the present arrangement.—*Boston News Bureau.*

Wilmington Meeting of the Penn. R. C. M. Assn.

By F. R. Wadleigh

The annual meeting of the Pennsylvania Retail Coal Merchants' Association held at Wilmington, Del., June 15 to 17, was an unqualified success, both in a business way and socially. The business sessions were ably presided over by President Howard White, of Philadelphia, to whose efforts and those of Secretary Wellington M. Bertolet was largely due the thorough, efficient and expeditious manner in which the various reports and discussions were handled.

The opinion seemed general that the association is doing the successful work for which it was formed, and at all the sessions there was a general feeling of fellowship.

The entertainment and social part of the meeting was most successfully provided for by the coal merchants of Wilmington aided by the Chamber of Commerce, while the lectures or talks of Chief Engineer Bevans, of the Philadelphia & Reading Coal & Iron Co., and Chief Mining Engineer Enzian of the U. S. Bureau of Mines were an excellent combination of entertainment and instruction that could not have been bettered. There were also a variety of interesting exhibits of the appliances and machinery used in the retail coal trade, which formed a valuable feature of the meeting.

The place of meeting, the "Play House" of the Du Pont Building, was ideal for the purpose, comfortable, well-ventilated and with ample room for everything and everybody. The association is to be congratulated on the convention as a whole, the large attendance, the spirit shown by the members, the efficient handling of all questions and the selection of Wilmington as a meeting place.

The convention was called to order by President White, and Mayor H. W. Howell, of Wilmington, welcomed the delegates in an unusually interesting speech, which was responded to by T. H. Tattersall, of Trenton, after which the delegates were again made welcome by President J. T. Satterthwait, of the Wilmington Chamber of Commerce.

Activities of the Association during the Past Year

President White, of the association, after taking the chair, delivered the annual address, which was followed by the reports of the various committees and officers. A *résumé* of the principal points covered in Secretary Wellington's reports follows:

The eleventh year of the association finds a membership of 1182—930 from Pennsylvania, 118 from New Jersey, 50 from Delaware and 84 from Maryland. During the year 272 new members were added. The total membership represents the sale of 3,000,000 tons of anthracite coal per year and includes 90 per cent. of the retail coal dealers of eastern Pennsylvania, New Jersey south of Trenton and Delaware and Maryland.

Consideration of the Clayton bill as affecting the coal trade showed that, as finally passed, the bill gives the coal operator the right to choose his own customers and that it may be used to prevent unfair competition. The proposed "war tax" on freight bills, finally dropped by Congress, was unjust and discriminatory and as such was formally objected to by the association. The Pennsylvania Anthracite Tax Act, now before the courts for determination as to its constitutionality, was touched upon, and dealers were advised to have a clear understanding with the operator or jobber from whom they bought coal as to the disposition of the tax in case the act was declared unconstitutional.

Attention was called to the percentage deductions on wet washed coal allowed by the carriers, as a result of complaint by the association. It was pointed out that this complaint has resulted in every member getting back a far greater return than the amount of his association dues. The order of the Public Service Commission of Pennsylvania reducing anthracite freight rates to Philadelphia territory about 40 per cent. is still before the courts, but it is not believed that the reduction will stand on the evidence as submitted. If the reduction is made, the rates to intermediate points will be reduced automatically by the terms of the long- and short-haul clause of the Public Service Act.

The past year has witnessed an unusual and widespread demoralization of prices. Retailers were able to purchase at unusually attractive figures, but many dealers did not take advantage of this fact and cut prices themselves, thus losing a profit they might have had.

The afternoon session consisted of short discussions on various retail trade topics, which were instructive, but brought out nothing particularly new. Reports of the several local associations were also read, giving information as to year's activities.

Concluding Sessions

The morning session on the second day was featured by the address on anthracite mining questions by Chief Engineer Bevans. Following this came reports of committees and the election of officers for the ensuing year. J. H. Tattersall, of Trenton, was elected president. The incumbents of the secretary and treasurer offices were reelected, together with five members of the board of directors.

The afternoon session was largely given over to a lecture on anthracite mining by Engineer Enzian, of the United States Bureau of Mines, the talk being illustrated by motion pictures taken especially for the bureau. These pictures showed every detail of getting out the coal—mining, preparation, loading and transporting, as well as first-aid work in case of accidents.

In the evening a smoker and vaudeville entertainment was given for the members by the City Club of Wilmington and was greatly enjoyed.

The following day was devoted by the members and their friends to a trip down the Delaware and back to Philadelphia, on the "Queen Anne," which was chartered for the occasion by Bush & Sons Co., the oldest firm of coal dealers in Wilmington.

The two lectures on mining should be of especial value; retail dealers, as a rule, are apt to take too little interest in and know too little about the mining end of the business. It would seem advisable to give them every opportunity to learn something about the way in which the product they handle is mined and prepared, and it is suggested that it would add to its value if the official organ of the association, *The Coal Dealers Message,* would include a mining department for the purpose of educating dealers on such an important and vital part of their business.

The exhibition of coal-handling machinery and supplies was quite elaborate and well worth attention. The facilities for exhibiting the various machines and their operation were ample, and the whole line of exhibits was the best yet seen at any of these meetings.

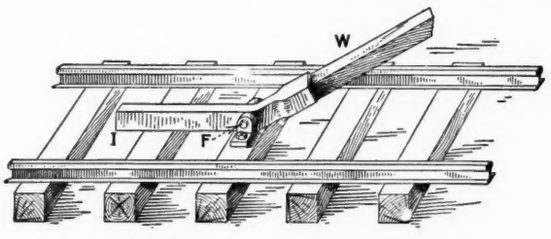
The list of exhibitors is as follows: Link-Belt Co., portable wagon loaders; Jeffrey Mfg. Co., portable wagon loaders; Autocar Co., motor trucks; Specialty Engineering Co., portable wagon loader, model of coal pocket; Gifford-Wood Co., portable wagon loaders, dealers' supplies; E. L. Koller, coal dealers' supplies; Standard Scale & Supply Co., oil engines, scales, supplies; Keystone Manufacturing Co., bags; F. S. Converse Co., screens, chutes and supplies; Howe Scale Co., scales; W. T. Lane & Co., bags; Fairbanks Scale Co., scales.

Safety Device in a Slope Mine

By Wilbur Greeley Burroughs

On the main slope of the Hisylvania Coal Co.'s mine, No. 22, at Glouster, Athens County, Ohio, the haulage is accomplished by means of an endless-rope system. The mine cars are gripped to the rope when coming out of and in going into the mine. If the rope should break, the loaded cars would run backward down the slope into the workings, with perhaps disastrous consequences. To insure against such an accident safety devices are installed at short intervals in the center of the track for the entire length of the slope.

One of these safety devices is shown in the accompanying illustration. Its operation is as follows: The arm *I* is made of iron, while the arm *W* is of wood. These arms are fulcrumed at *F,* this fulcrum being fastened securely to the track on the floor of the slope. The arm *W*



A Simple Car Stop for Mine Slope

is so attached that ordinarily it is high enough above the floor to be struck by the mine cars as they pass up the slope.

As a loaded car moving up the slope strikes the arm *W,* it revolves on *F,* moving downward, allowing the car to pass over it, the iron arm *I* at the same time rising slightly into the air. When the car has passed over and the downward pressure on the arm *W* is thus relieved, the iron arm *I* on account of its weight falls to the floor of the slope, reëlevating *W* to its initial position.

If the rope to which the loaded cars are gripped should break, the rear of a loaded car going backward down the

slope would come in contact with the arm *W* and be brought to a standstill. These devices are placed at short intervals so that a car cannot acquire much momentum before it is stopped by the arm *W*. Thus there is no danger of a car being thrown from the track by impact or of its gaining sufficient force to break the arm *W*.

Large Decrease in Output of French Coal

No statistics have been published that would indicate the actual production of coal in France in 1914, says Consul General A. M. Thackara in the supplement to *Commerce Reports,* but from information obtained from the Comité Central des Houilleres de France, the French coal mines worked up to their normal capacity during the first 7 months of the year. At the outbreak of hostilities the extraction of coal on account of the mobilization of the miners and the invasion by the enemy fell off to 60 per cent. of the average output. During the last four months of the year all the mines still in operation gradually increased their production, so that at the end of 1914 they were working to almost their full capacity.

The mines in the North Basin and two-thirds of those in the Department of Pas de Calais were either in the hands of the enemy or were in the center of hostilities, so that the production in these regions was almost nil. Taking these facts into consideration and estimating on the basis of the production in 1913, the output of coal in France during 1914 was about as follows: First 7 months, 23,500,000 tons; during August, 2,000,000 tons; during the last four months, 4,500,000 tons, making a total for 1914 of 30,000,000 tons.

Coal mines are now producing at the rate of about 20,000,000 tons a year or one-half the normal output. The annual consumption of coal in France for industrial, domestic and for other purposes averages about 60,000,000 tons. To supply the deficit of the native production about 20,000,000 tons of foreign coal in normal times have to be imported. While the railroads, electric light and gas plants are consuming nearly the same quantity of coal as in peace times, the almost complete cessation of operation in the great metallurgical centers of the north and east of France and the decreased activity in other coal-consuming industries have resulted in reducing the coal consumption of France to about 35,000,000 tons. Therefore it is estimated that from 15 to 16 million tons of foreign coal will have to be purchased.

As imports from Germany and Belgium are not possible, coal from Great Britain is being received in large quantities. The principal ports from which the coal is sent are in South Wales, although direct shipments are made from the east coast of England, notably from Hull, Newcastle and Hartlepool. The price of coal at the mines has either remained the same or increased but slightly, but the cost to the consumer has risen considerably owing to increased freight rates both on land and on water.

The receipts of coal from other countries in 1914 amounted to 15,344,550 metric tons against 18,710,935 tons in 1913, a decrease of 3,366,385 tons. Of the imports in 1914 Great Britain shipped 10,759,085 tons, Germany 2,341,996 tons and Belgium 2,032,098 tons. In addition to the above France imported 1,446,423 tons of coke in 1914 against 3,070,038 tons in 1913 and 746,875 tons of briquettes as compared with 1,085,994 tons during 1913.

Of the imports of coal during last year, 5,078,346 tons were received during the last six months, mostly from Great Britain. The exports of French coal during last year were 701,556 tons, compared with 1,304,377 tons for 1913, the principal country of destination being Belgium.

Coal Scarcity in Holland

The situation regarding coal in the Netherlands, says Consul F. W. Mahin, of Amsterdam, in *Commerce Reports,* is becoming precarious. Before the war unlimited quantities could be had from both Germany and Great Britain. Now the imports from those countries are small, uncertain and insufficient for current demands.

The wholesale price of coal in this market has doubled, bituminous coal having advanced from about $4 a ton, the normal price, to about $8; anthracite has increased to about $10.

While this country produces peat in great abundance, it produces practically no wood for fuel and so little coal as to be negligible—only about 1,500,000 tons a year, from a few mines in the province of Limburg. Therefore, if outside fuel supplies were entirely cut off, the Netherlands would be practically limited to peat for fuel.

As respects the coal supply for the near future, the outlook is uncertain. Attention has been turned to the United States, but distance and freight rates cause importers and users to hesitate about placing orders there.

In this country close economy is now being observed by users of coal. As an instance, the municipal street lights of Amsterdam are now burning at only one-half their usual strength, which with other economies materially reduces the consumption of coal by the city.

New Mexico Breaks Record

The production of coal in New Mexico in 1914 was 3,877,689 short tons, valued at $6,230,871. This was the greatest coal output in the history of the state, according to C. E. Lesher, statistician of the U. S. Geological Survey.

New Mexico is the only one of the Rocky Mountain states in which more coal was mined in 1914 than in 1913. The increase of 168,823 tons in quantity and $829,611 in value is due to the greater output from Colfax and Santa Fé Counties, which, being on the east front of the Rocky Mountains and not far distant from the larger Colorado fields, were able to supply a part of the demand normally furnished with coal from Colorado, from which the 1914 production was restricted because of the continued strike.

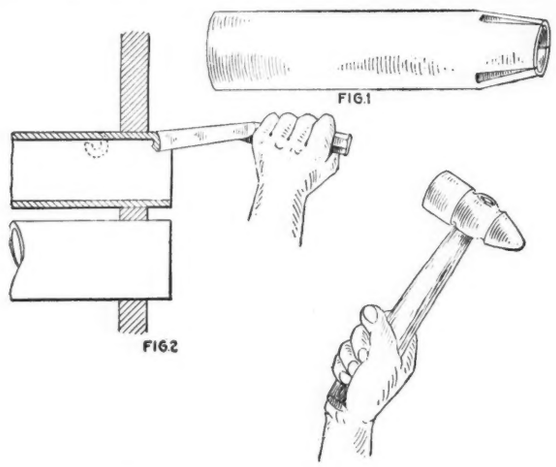
Regarding the limit of depth in mining, Joseph Dickinson said: "Some people are talking now of 5000 ft., and I should think that it may be obtained hereafter by means of shorter shifts, taking a man out from the face and allowing him a little respite and time to cool, and by the use of some of the modern cooling adjuncts. I do not know what effect ice machines will have in the working-face, and I do not know what effect liquid air will have; but compressed air when liberated produces a degree of coldness sufficient to freeze small valves of air machines, and that would have a cooling effect in a mine. We have by no means exhausted the cooling powers within reach of the miner at present."

Removing Boiler Tubes

In removing tubes from boilers, if the entire set is to be removed and replaced, they may often be cut from the inside and allowed to drop, to be taken out through the manhole.

Where only one or two flues are to be taken out, this method is impossible. In that case one or more flues may be removed by means of a ripper, which cuts the flue, allowing it to be slipped endwise through the tube hole. The accompanying illustration explains this method.

A curved ripper, Fig. 1, should be used, as it tends to force the flue inward as it is cut, thus preventing the



METHOD OF USING RIPPER

bulges that are sometimes made when a straight ripper is used. By keeping bulges out of the flue, it is easily slipped through the tube sheet.

Discrepancies in Boiler Usage

BY C. W. CRAWFORD*

An error unchallenged and unnoticed for years becomes a habit as persistent in perpetuating itself as does an actual fact. The too-frequent wrecking of hoisting engines in coal mining indicates an error somewhere. When an engine goes to pieces all of a sudden, there is something wrong, and the cause is frequently regarded as a mystery and any attempt at explanation is accepted with suspicion.

It is no trifling cause that breaks bed-plates, cranks, pistons or whatever is weakest, but after all it is inexcusable and preventable. The presence of water in the cylinder is uncalled for, but how it came there is the real problem. There is no power derived from it, and therefore the less of it the better. It doesn't come through careless handling of the engine. It is an intrusion. Its source is the point to be sought after.

It comes from the boiler. The force that causes it to leave the boiler is the steam as it travels to the engine. Ordinarily it is in the form of fine spray. The force that starts the spray from the boiler has also the greater effect of starting solid slugs of water, when the conditions are favorable therefor, and when once a slug of water is started in the pipe it is compelled to go through, and disastrous results may follow.

*President, Crawford & McCrimmon Co., Brazil, Ind.

It is pertinent to ask why the water is thus caused to leave the boiler. It will be difficult to get engineers who are trained to the present conditions to believe the real cause when it is pointed out. This problem was thrashed out years ago when the principal large boiler plants were located on steamboats. In those times similar accidents occurred frequently; cylinder heads were knocked out, connecting-rods and cranks were broken, etc. Steam drums (or header lines) and outlet pipes from the boilers were enlarged to more than double the capacity of those formerly used, and the trouble ceased. The steam drums were of large capacity, 30 in. or more in diameter, and the boilers small, with diameters from 38 in. to 42 in. Though the standard steam legs of our present 72-in. 150-hp. boilers are only 6 in. in diameter, the old-time boilers would have been furnished with steam legs with a diameter of 9 in.

For further comparison, a steamboat having 24-in. cylinders, 8-ft. stroke would have five boilers 25 ft. long of above diameter, while an uptodate hoisting engine with 24x36-in. cylinders and the same piston speed would require two boilers 72 in. diameter, 18 ft. long. The velocity of steam leaving the former (five outlets) would be 861 ft. per min. and in the latter nearly 5000 ft. per min. Header lines 16 in. in diameter are assumed to be sufficient on large modern boilers, so they are installed either without domes or with these accessories not nearly as large as they should be.

The boilers of the present time are excellently made and embody the best of material and are, as such, all that can be asked for, but it would seem that a mistake has been made in adopting a standard outlet steam opening, so small as to compel a steam velocity so rapid as to bring over the spray from the boiler without providing any means of separation.

An efficient separator will generally insure reasonably dry steam, if the right sort of separator is chosen; but the spray or solid water ought never to have cause for leaving the boiler.

There isn't much dignity in borrowing from the practice of 50 years ago, but the right must prevail in the end. Another good point from steamboat practice is making the end of the steam pipe project several inches into the drums or header line. This is an efficient aid in heading off the entrained water from passing on to the engines.

In any well-conducted boiler and engine plant 12 to 20 lb. of water (steam) per hp.-hr. is sufficient for reasonable economy. A consumption of 20 to 30 lb. per hp.-hr. represents roughly the average of hoisting engines, the difference being a useless quantity of water heated to the temperature of the steam, and which exerts no force and is a detriment to lubrication as well as to economy of coal.

Operator's Duty to Furnish Headers—Where headers are customarily or necessarily used in mining, they constitute "caps," within the meaning of the Kentucky mining statute which requires an operator to provide miners with a sufficient number of caps and props. And where an operator is bound by this law or by contract to furnish headers, the miner does not assume the risk of being injured in consequence of the operator's neglect to supply them after repeated requests, unless he is chargeable with knowledge as to a loose condition afterwards causing him injury. (Kentucky Court of Appeals, Big Branch Coal Co. vs. Wrenchie, 170 Southwestern Reporter 14.)

The Labor Situation

On July 6, John P. White, president of the United Mine Workers of America, will commence a two months' membership campaign in the anthracite region. It is the hope of the union that every mine worker will become a member of that organization. Mr. White's first meeting will be at Carbondale in the northern district. He will attend the convention of District No. 1 at Scranton, beginning July 19, and will be present at the tri-district convention at Wilkes-Barre, at which the demands on the operators will be framed. The three anthracite districts are Scranton or No. 1, John T. Dempsey president, John Mack secretary; Hazelton or No. 7, Thomas Kennedy president, John Yourishin secretary; and Shamokin or No. 9, James Matthews president, James J. McAndrew secretary.

Possibility of a Lockout in Ohio

The arrangement between the eastern Ohio operators and the union conformed with the letter of the agreement which the latter made with the Hocking Valley operators. The miners said they would not settle the strike in eastern Ohio unless they received 47c. per ton for machine-mined run-of-mine coal. They kept that promise, but the Hocking Valley operators declare it was kept only to the ear and not in principle, seeing that it was offset with a number of valuable concessions. They consequently are making a thorough investigation to see whether they have a valid reason for attempting to overthrow their agreement with the miners. Their agreement with the union favored them, and they think they are in danger of losing the advantage gained.

The miners in the Ohio region have lost ground everywhere by the action of their union. They advocated a uniform scale based on the state average. This favored the Hocking operators, and accordingly they signed. On the other hand the uniform scale injured the eastern Ohio operators, so they refused to sign until concessions had been made which offset, and possibly more than offset, the demanded price concession. This was a bad situation; the Hocking men had reduced their wages to increase the wage of the Belmont men and then the latter made concessions so that in no real sense was the increase that they sought obtained

Now, the Hocking operators, denying that they have been delivered what they bargained for, are disposed to overthrow an agreement which they truly say was only conditional. The only dispute is whether the conditions have been really met.

If the investigation proves or seems to prove that the deadwork and other concessions make important changes in the cost per ton, then the operators of the Hocking Valley, Jackson, Pomeroy Bend, Crooksville and Massillon districts will meet to discuss the issue and may cancel their contract.

Albasin Has Been a Good Leader

President C. J. Albasin, of the eastern Ohio district, denies the report that he will resign and says he is at a loss to explain the rumor. He is now serving his second elective term, which started Apr. 1 of this year. He appears to be a good executive in many ways. The fault in conducting the campaign, involving as it does all Ohio, can hardly be rightly ascribed to him. There was little or no violence during the strike, and this was largely due to Albasin and his lieutenants, who strove to keep down the unruly Industrial Workers of the World. There was a large amount of pilfering and some cases of robbery, but only because Albasin did not have at all times perfect control of the foreigners in the union.

The attempt to raise wages in one district and to lower them in others was a folly of follies, for it could only result in failure to raise wages and in success in lowering them, and now it seems that the operators whose rates were lowered are not satisfied. There is this gain, however—that Ohio may, as a result of the readjustment, gain a widened and steadier market as soon as times are better and the markets, lost during the strike, are recovered.

John McLennan, president of the United Mine Workers of America, is starting an agitation to have John D. Rockefeller, Jr., convicted of murder, arguing that as he was directly responsible for hiring the mine guards at Ludlow, he was to blame for their actions just as John R. Lawson was held to be chargeable for a murder committed by men under his direction.

The Carr mine of the Carr Coal Mining & Manufacturing Co., south of Leavenworth, Kan., is idle because of a dispute between the superintendent and the 200 miners. Two weeks ago a flood caused water to run down the air or escape shaft, and when the superintendent found that the fans were not able to force enough air through the mine he decided for safety's sake not to operate on that day. For this reason the pit committee called the men out, and they have not been at work since. A deputy state mine inspector examined the shaft and pronounced it in good condition.

Development of a Chinese Coal Mine

The Yingmaoyeh coal mine, says Consul General Horace Remillard, of Hankow, in *Commerce Reports,* is situated in the district of Puchi, in the Wuchang prefecture of Hupeh Province, in a large coal region on the Hunan border. Mining by native methods has been carried on there all along, but foreign machinery has recently been introduced, in connection with foreigners acquiring an interest in the development of the properties. Arrangements were made before the revolution for the exploitation of the Yingmaoyeh mine, but it is only two years since it was possible to make a start. Machinery was brought out from home and a foreign engineer engaged, and now two shafts have been sunk to the seam, which lies at a depth of 250 ft. and is 9 ft. thick. There is a steady daily output amounting to 2,000 tons per month.

The coal is a hard anthracite of great lasting power and burns clean away, leaving as its only residuum a little white ash. It consists of 78.81 per cent. of fixed carbon, 14.88 per cent. of volatile matter, 0.17 per cent. of sulphur, 5.29 per cent. of ash and 0.85 per cent. of moisture.

The chief trouble to be overcome in connection with the mines has been a superabundance of water, but a system of electric pumps has overcome that difficulty. A third shaft is now being sunk, which will be completed by August, and then the output of the mine will be doubled. At present 630 men are employed in various capacities.

The coal has to be carried by coolies to the waterway at Puchi City, a distance of 25 li (about 8 mi.), where it is put on board chartered junks, and has hitherto been sent to Shanghai, where it meets with a ready market. Arrangements are being made to have it put on sale in Hankow. A large consignment has arrived, and it is expected from the superior qualities of the coal that the output of this particular mine will become very popular. It is easily lighted and has great heating power and no smell or dust.

COMING MEETINGS

American Institute of Electrical Engineers will hold its annual convention June 29 to July 2, 1915, at Deer Park, Md. Headquarters will be at the Deer Park Hotel. Secretary, F. L. Hutchinson, New York.

American Mine Safety Association will hold the following meets: July 2-3, Big Stone Gap, Va.; July 23-24, Billings, Mont. Secretary, H. M. Wilson, 40th and Butler St., Pittsburgh, Penn.

Alabama Coal Operators' Association will hold its annual meeting at Edgewater, Ala., on July 10, 1915. James L. Davidson, secretary, Birmingham, Ala.

The Order Kokoal will hold its annual pow-wow at Chicago, Ill., July 13 and 14, 1915.

The Southern Appalachian Coal Operators' Association will hold its semiannual meeting July 23, 1915, at Knoxville, Tenn. J. T. McCoy, Knoxville, Tenn., is secretary.

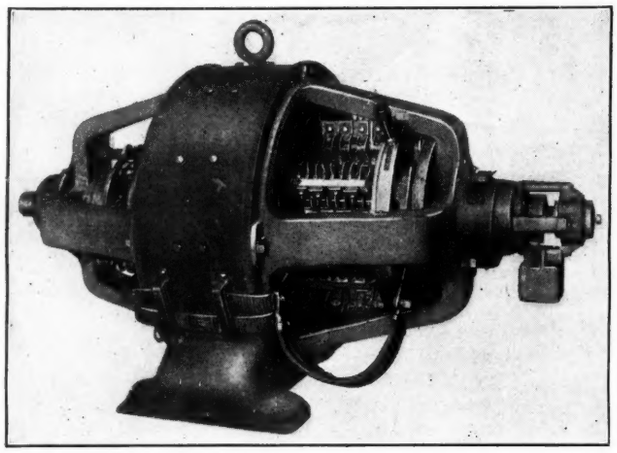
The United First-Aid Corps of the 4th district, Delaware, Lackawanna & Western R.R. Co.'s coal department, will hold its third annual first-aid contest at Harveys Lake, Penn., on Aug. 14, 1915. Secretary, Lewis Richards, 212 East Green St., Nanticoke, Penn.

The American Mining Congress will hold its 18th annual session at the Exposition Memorial Auditorium, San Francisco, Calif., Sept. 20-22, 1915. J. F. Callbreath, secretary, Majestic Bldg., Denver, Colo.

New Apparatus and Equipment

Rotary Converters in Mining

It is interesting to note the favorable impression being made by the rotary converter in coal mining, particularly since the manufacturer has developed the new commutating-pole machine in the smaller sizes. One of the chief troubles in mining work, particularly with small rotaries, has been commutation. The mining load varies anywhere from 10 per cent. of full load to 100 per cent. overload in a short space of time. With the noncommutating pole rotary, it was necessary to shift the brushes with the change in load, or sparking and damage to the commutator would result. This would end finally in short-circuited coils and burnouts.



THE NEW ROTARY CONVERTER

Since the application of commutating poles, a machine normally designed for a 35-deg. rise in temperature at full load will carry a 50-per cent. overload for 2 hours with a rise not exceeding 55 deg. and a momentary overload of 100 per cent. without the least sign of sparking. In the commutating-pole design the brushes are set on the neutral point and fixed there, and the varying loads have no effect in so far as sparking is concerned.

The Westinghouse Electric & Manufacturing Co. recently received an order from the Stonega Coke & Coal Co. of Virginia for 24 commutating-pole 150-kw. rotary converters, wound for six-phase 60-cycle 275-volts direct-connected and operating at a speed of 1200 r.p.m. These will be placed in 12 underground substations which will be supplied with power purchased from the Kentucky Utilities Co. The power will be delivered to five points at a voltage of 33,000 and stepped down to 2300 volts, at which potential it will be transmitted to the mine, where there will be two banks of transformers, each consisting of three 50-kv.-a. single-phase machines wound for 2300 volts on the high-tension and rotary voltage on the low-tension side. Each substation will be controlled by a five-panel switchboard.

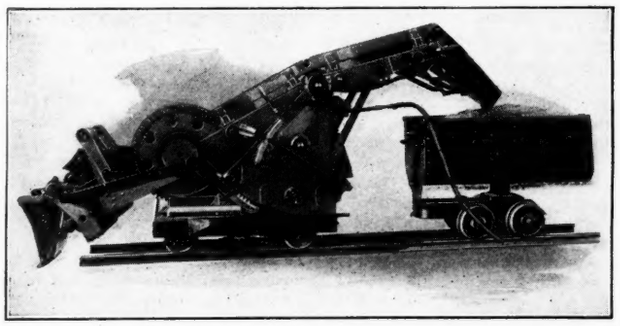
Another installation, similar except that it will be above ground, is that of the Conemaugh Smokeless Coal Co. in the Pittsburgh field. This installation consists of one 200-kw. rotary converter with the same characteristics as those for the Stonega company. This machine is of the bracket type, as will be seen from the accompanying illustration. The frame is of rolled steel, the feet being pressed out of a single sheet. This type of machine is built in three sizes which are popular in the mining field—100, 150 and 200 kw.

The Westinghouse company has also built a new type of this machine in the larger sizes, having furnished one 300-kw. 275-volt rotary converter of the commutating-pole type and a machine similar in design of 500-kw. capacity to the Lehigh Coal & Navigation Co., at Lansford, Penn.

The Halby Shoveling Machine

The efficiency of drilling machines has been increased many-fold in the last few years, but a great loss of time and money in driving drifts and tunnels at present is still incurred in mucking. After the material is broken, with but few exceptions mine operators are still using the methods of loading by hand which were in vogue over 2000 years ago. Recently the Halby shoveling machine, manufactured by the Lake Shore Engine Works, of Marquette, Mich., has been operated successfully for six months in one of the iron mines of northern Michigan, under the most varied conditions.

The most important factors which a shoveling machine should possess were carefully considered in this design. They are as follows: The first cost should be moderately low. The machine must be handled by miners and should be free from all complications. It must handle material consisting of the finest grains up to large pieces, material both wet and dry, and stand severe treatment as well as great wear and tear. The cost of upkeep must be low. The motion must be such that if any firm object is struck the mechanism will not be damaged. The machine must be small and compact.



THE MACHINE LOADING A CAR

This shoveling machine was first demonstrated at the plant of the Lake Shore Engine Works last fall, at the meeting of the Lake Superior Mining Institute held on the Marquette Range. After the meeting it was shipped to the Judson mine at Alpha, where it is at present load-

ing a 2-ton car in an 8x8 drift in 1½-min. when the loading conditions are average—that is, when there is a fair-sized bank of ore in front of the machine. At times the ore bank is small and scattered so that under these conditions it takes as much as 4 min. to load a 2-ton car; but an average loading time is a 2-ton car in about 3 minutes.

Formerly, with hand labor, it required two men shoveling 20 min. to load a 2-ton car under the same conditions as the machine is now working. The machine requires about 200 cu.ft. of air per min. The cost of operating for an 8-hr. shift is approximately as follows:

Power	$3.00
Runner	2.50
Interest on investment	.20
Repairs	.50
Oil, etc.	.17
Total cost per 8-hr. shift	$6.37

Figuring 200 tons loaded per 8-hr. shift this shows a net cost per ton of $0.031. The labor expense of two men loading for an 8-hr. shift would be $5 per day. Under similar conditions they would load approximately 40 tons in 8 hr., or a cost of $0.102 per ton. The Halby shoveling machine, therefore, loading for less than one-third the cost, at the same time loads five times the tonnage.

The overall length of the machine when ready for operation is approximately 15 ft., but the machine can in a few minutes be shortened to an overall length of 10 ft., if especially short curves or limited space should make this necessary. The overall height of the machine is 5 ft. 4 in., and the total width approximately 4 ft. The total weight is 7500 lb.

The machine is made up in three distinct sections, each forming a unit by itself. The top section contains all the working parts for the conveyor and shovel mechanism. The center or power section contains the motive power, all the clutches and the driving gears. The lower or truck section serves as a support for the entire machine. The top section can be lifted off the center section by removing two caps at the top of the side frames. The center section can simply be lifted from the truck, there being no bolted connections between them. This construction feature makes this loader especially adapted for mine and tunnel work where it often becomes necessary to move through openings too small to allow the entire machine to pass.—*Engineering and Mining Journal.*

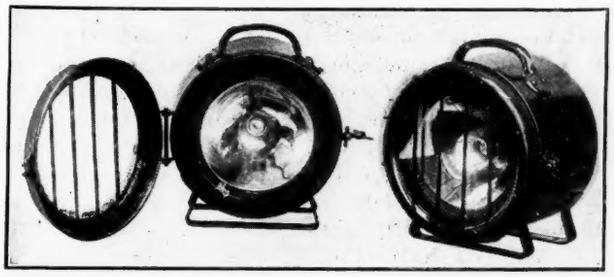
New Mine Locomotive Headlight

Many mine operators have long wanted an incandescent mine-locomotive headlight to replace costly arc lights or inefficient carbon bulbs. To meet the demand for such a headlight the Esterline Co., of Indianapolis, Ind., has recently perfected what is called the "Golden Glow."

This headlight is similar in design to the Golden Glow railway headlights which have been widely adopted in the past 18 months, because of their mirrored glass reflector and their fog-penetrating, nonblinding light. Exhaustive service tests have been made on the new headlight, and the result indicates that equipment may now be obtained which will give long bulb life, reduced current consumption and maintenance expense and give a nondazzling, keenly penetrating illumination.

The new headlight, as may be seen from the accompanying illustration, is really a lamp within a lamp, the interior lamp body carrying a 7-in. mirrored glass reflector and a Mazda bulb, so supported that the constant jarring and pounding incident to this service will not break the filament. The headlight is practically watertight.

Particular attention is called to the advantages which the Golden Glow light presents in a restricted space over the dazzling glare of an arc. Men ahead are not blinded or confused and may work in its light beam at close



THE NEW HEADLIGHT

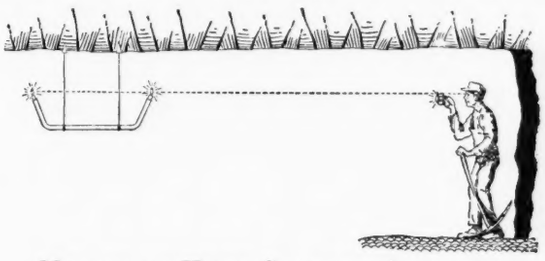
range or at considerable distance with equal ease. In fog it secures projection not possible with any white light.

In electric railway and tunnel service over 6000 Golden Glow headlights are in use, and during four years not a single accident has been reported on account of lack of light or an inability to see an approaching car.

A reduction in cost of headlight operation has been long sought. The current consumption of the Golden Glow headlight is reduced from that of a 4-ampere arc light to ⅓ of an ampere with a 36-watt bulb, or ⅕ of an ampere with a 23-watt bulb. Furthermore, the expense of maintenance of arc lights, such as the cost of parts, replacement, cleaning and adjustment, has been reduced to the renewal of incandescent bulbs.

Novel "Sighting" Apparatus

The accompanying illustration shows an apparatus which will materially facilitate "sighting" places in the mines which are being driven on line. By means of this instrument the miner at the working face of a tunnel or drift



METHOD OF USING SIGHTING APPARATUS

can determine the true direction in which to advance.

The target consists of a telescope bar having upturned ends in which candles are placed. The bar is provided with hooks to which cords are connected and fastened to the plugs in the roof of the tunnel. The bar thus extends in the true direction that the tunnel or drift is to take.

The candles in the target being lighted, the miner at the working face of the tunnel holds his candle so that it is in line with the two in the target, and in this way he is able to tell at any time the proper direction in which to advance. The inventor of this device is Frank Higgins, Box 218, Mulberry, Kan.

Editorials

Michigan's Low Death Rate

However high the State of Michigan may rank as a manufacturer of automobiles, house-heating appliances and furniture it can by no means be considered as a great coal producer. During the past year its output of coal amounted to 1,238,030 tons, or slightly over one-fifth of 1 per cent. of the production of the entire country. There is one circumstance, however, in connection with this coal output that practically places Michigan in a class by itself—only two deaths through accident occurred during the entire year. This corresponds to a production of 641,515 tons for each life lost.

While it will readily be conceded that many individual firms produced during 1914 tonnages per fatality vastly superior to the above, yet no other state considered as a whole has such an enviable record. The death rate per 1000 men employed in and about the mines in Pennsylvania was about 2.35, in West Virginia it was 7.43, in Illinois 2.43, in Missouri it was 1.82, while for the entire United States it was 3.3. Michigan's death rate per 1000 men employed in coal mining shows a marked contrast to the above, being 0.87.

As all mining men know, a low death rate either per thousand employees or per million tons of production may not be in anywise significant of care on the part of either miners or mine officials. Natural conditions may be such as to render operation either inherently safe or unavoidably dangerous, and the figures showing the death rate may be, and frequently are, merely a reflection of these conditions.

Whatever may be the reason for the low death rate in this state—and this death rate has not always been low—it must be conceded that in the year 1914 coal was mined there with a lesser cost in human life than in any other state in the country with an output at all comparable to that of Michigan.

The Enduring Conflict

Under this title one of our distinguished contemporaries has contrasted the continuance of industrial disputes with the impermanence of the present war and has argued that in England and elsewhere when the war is over class consciousness will take up the gage of battle after national consciousness has ended its warfare.

Before discussing this statement, however, it must be remembered that the word "consciousness," while often used of a correct sentiment, usually means something more in the mind of the socialists and labor leaders who invented it. In fact "consciousness" is frequently also a euphemism for "aggressiveness," and it will be used in this sense in the paragraphs which follow.

Where that quality is merely self-recognition it is fair and reasonable and no one can find fault with it. Surely no one would wish that in any class, sex, nation or creed the members should be so supine as not to seek their inherent rights to self-expression and equal opportunity.

In what follows, therefore, consciousness will be used not so much in its correct but in its popular usage as a recognition of one's power of aggression and a determination to use that power to its fullest extent.

The continuance of struggles derived from such consciousness, as endless as they are implacable, bodes no small degree of misery to the human race. But with judgment all forms of consciousness, whether of nation, class or sex, may be prevented from dividing mankind. At one time creed consciousness separated us, and we killed it or nearly killed it by forgetting it. Our national divisions are about to die also, not so much as a result of action as by reason of our knowledge that there is nothing national to be really conscious—that is, aggressive—about.

And class and sex consciousness, lately so loudly heralded, will pass with the rest into the limbo of forgotten separations. But this change will not come as the outcome of legislation; at least the laws we pass will have little influence in the result.

It is not well here to take up dogmatically the question of the value of laws in stemming any kind of intemperance, whether it be that of the body or of the mind. But it may be well to recall that it is asserted that the laws favoring prohibition have done more harm than good, and perhaps legislation restraining intemperance in labor agitation may not have any better result. It is not to laws but to character that we can best ascribe the decline of that creed consciousness of the past which had so many victims, and not to legislation but to self-restraint must we look for a gain in temperance. So also the contentment of labor is to be sought similarly in a correct attitude toward labor problems rather than in statute law.

Consequently all the clash about injunctions, the Clayton bill, incorporating unions and like legislative enactments are interesting and perhaps important, but must not be regarded too seriously. The prime necessity is to destroy class consciousness by a generous sense of the importance of class interdependence.

This work is the main duty of the next half century. The large corporation is separating operators and men. What is it doing to correct this evil; for having created the difficulty it should attempt to remove it? In most cases it is creating much trouble by continually changing officials between whom and the miners in the short period of their contact no sympathy or sentiment is likely to spring up. Foremen are shifted and discharged to satisfy expediency or efficiency without regard to the fact that, like gears, men run smoothest that for awhile have been running together.

It is not enough to say that small corporations are as much disposed as large to change their mine foremen frequently. That is quite true, but in these small concerns there is always the operator as a permanent representative of the company, and he is often far closer to the man at the face than the foreman at a large mine.

As a result of frequent changes at the mines of large corporations, there is often no one to whom to be loyal,

no one to personify the company. The agricultural workmen from Europe who come to our mines hardly know what a "company" is. They are prepared to be loyal to someone in authority, but the man to whom they *could* give their allegiance stays so short a time in control that the loyalty is not won, and then also the man himself too often stays only a month or so and does not have time to develop any such an attachment.

It is not sufficient for a company that its directorate be composed of men who are fair and just. Its officials from top to bottom must be men who inspire loyalty and trust. There must be a degree of permanence in their tenure of office and in their methods of operation so as to create these qualities. A new official is a distinct shock to an organization. Everyone is prepared to resist the changes he makes, for fear they may not be for the benefit of the individual so resisting. Where changes are frequent, therefore, loyalty is impossible.

The most successful companies are those retaining men in office whose personality is so marked that the men work for the official and not for the company. If absentee management is to continue—and it will—and if it is to succeed—and it must—then we must find a way to make it not absentee at all in action, but must have the local boss a visual representative of the men at the home office.

We have been too careless of our duties in this respect. Many a man of character and friendliness has put a browbeater, a narrow, irresponsible man in charge and earned the ill-will of his men thereby. And many operating heads have changed their bosses needlessly and have lost the attachment of the men to the old official, which was worth as much as the greater efficiency of the new.

Many men have not scrupled to let old miners go and bring in new men in their place every day. The commonest sight at a mining village is a "flitting." The men go and come daily and there can be no basis for loyalty.

You know how it is in your own office. You know that you have men who seemed undesirable at first till you knew their ways and how to take them. They grew on you. The miners are just like you are—ruffled up at first with every unexpected characteristic of a new man, untrusting, uncertain and suspicious. Time removes those difficulties, so that even a man's faults are soon regarded as inevitable and natural.

Then just as everyone begins to move in his sphere without friction the man in charge is removed, and the shock is given and all the work has to be done over. Or the miners leave and are replaced and the loyal, or at least contented, force is replaced by strangers who have no friendliness with the boss, no attachment to their homes and a sort of grouch for everything and everybody.

The itinerant mine foreman is a menace to the industry, but it rarely is his fault that he stays so short a time in one place. The miner who moves from colliery to colliery is another source of discontent, and he also is not always to blame for so frequently placing his belongings on the moving wagon.

In a village where the people have known one another for years it is hard to introduce an atmosphere of doubt and suspicion, but where the continued shifting of men has made them all strangers to one another almost any story can be believed and any misfortune may be feared. If then peace is to replace class conflict, an attempt must be made to stabilize the population so that a community interest will be built up.

The Ebb and Flow of Alien Labor

The falling off of immigrants has been accompanied with a large increase in the number of returning foreigners. In the ten months ending May 1, 1915, the ratio of departing foreigners to those entering is 92.6 per cent. The net gain is only 28,364 men. The following table shows the record of arrivals and departures since 1910:

Year Ending June 30	Total Aliens—Arriving	Total Aliens—Departing	Net Gain	Ratio of Departing
1915*	373,382	345,018	28,364	92.6%
1914	1,403,081	633,895	769,276	45.1%
1913	1,427,227	611,924	815,303	42.9%
1912	1,017,155	615,292	401,863	60.5%
1911	1,030,300	518,245	512,085	50.3%
1910	1,198,037	380,418	817,619	31.8%

*Ten months to May 1, 1915.

The unfortunate part of this loss of men to Europe is that it removes the most energetic workers. At other times we might congratulate ourselves that those returning are men too old to work or misfits or men too much bound by home ties to become nationalized and settled. We might congratulate ourselves on their loss, for we might well say they could no longer work or never were any good or were men hopelessly inassimilable.

But the men we lose to the war are young and active men with ideals, in many ways the pick of the workingmen in the countries they come from. The other countries gain by their return as we have gained by the coming of the more active men of Europe.

Moreover, we have broken them to our needs and industries and have given them a smattering of our ideals and our language. We have imparted to them all a degree of instruction which is now largely thrown away, for only a few will return when the war is over.

The shiftless, the unenterprising and the old will remain, and in a degree America will suffer from that deterioration of laboring personnel which has occurred in Europe as a result of the lure of America.

The public press has discussed the lack of interest in the employee due to absenteeism of the employer. It is true that the ends of democracy and the need for sympathy cannot be compassed under absenteeism. However, the evidences are that the operator is showing more interest than ever in the welfare of the employee despite his abstention from that employee's working place.

But if the operator has been growing away from the miner, still more has the miner been getting out of touch with the operator, whose language he no longer speaks and whose name even he probably too often does not know.

Some of the smaller companies have wretched living conditions; the mines are full of puddles; conditions of work are grievously unfavorable. But the miner in these smaller operations knows his boss. He feels that his employer is a man, not perhaps his ideal of a man, but still a man; and somehow there are no strikes and sometimes the men will work for him at much less than the union scale despite all the inconveniences with which their labor is encompassed.

The importance of this unity of feeling between worker and employer emphasizes the fact that the men who have learned English and know something of the company and the boss are an asset, and the occurrence of war that takes them away, that kills them, and sends us others whom we do not know, and who will be years learning to know us, is a distinct loss.

Discussion By Readers

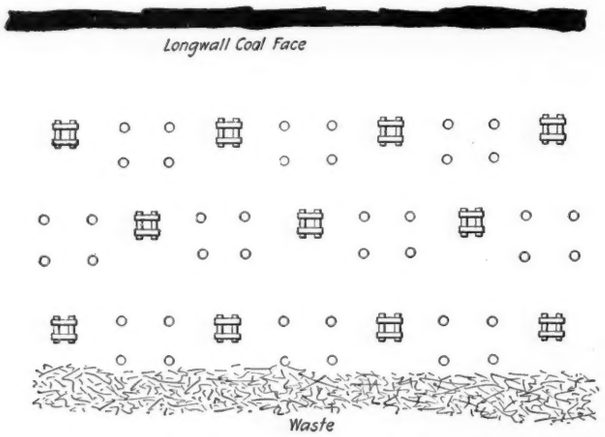
Longwall in Pittsburgh Seam

Letter No. 11—I noted with interest that Mr. Brown, in his Letter No. 8, COAL AGE, May 29, p. 939, is of the same opinion that I expressed in Letter No. 7, May 15, p. 859; namely, that longwall advancing cannot be successfully employed in working the Pittsburgh seam, chiefly because of the impossibility of maintaining the haulage roads.

Mr. Brown presents an excellent block or panel system for mining this seam. I think, however, that if he will carefully study the retreating system presented in my previous letter, he will admit that it possesses certain advantages over his proposed block system.

I freely admit that the block system presents a decided advantage in the early stages of the development by permitting a larger output of coal earlier in the game. But to offset this advantage, the system requires the driving of a large amount of narrow work, which is expensive.

Comparing this method with the retreating plan I presented, it will be observed that my entries are driven



SHOWING CRIBS AND POSTS AT WORKING FACE

directly to the boundary; but I believe that their expense is fully justified by the large amount of working face thus developed, which means much cheaper coal and a large output at once becomes available. It must be acknowledged, also, that the roads are more permanent and there is less shifting of tracks and changing of switches in the retreating plan, which means a great decrease both in cost of maintenance and in the operating expenses.

One of the most important features of the longwall retreating plan is the protection it affords against the occurrence of creeps and squeezes. The same protection is not afforded by any plan of mining that provides for a large extraction of coal in the early stages of development. Another feature that can be urged in favor of the proposed retreating plan is the facility it affords for good drainage. The diagonal roads in this system invite natural drainage to a greater extent than where the butt- and face-headings are driven at right angles to each other as in the panel system. This feature tends to reduce the necessary expense for draining the mine.

In addition to the explanation given in my previous letter, the accompanying sketch shows the plan of cribbing at the working face. In order to support the enormous roof pressure, I would suggest carrying three rows of cribs. These should be built of hardwood blocks 4x4x18 in., and spaced 10 ft. center to center. Where the roof is quite frail, four posts should be stood between adjoining cribs, as shown in the figure; also, the cribs in the three rows should be staggered, as shown. When undermining the coal, sprags should be set 5 ft. apart. The coal may then be cut across the entire face of 100 ft., which is a great advantage in machine mining. The sprags are easily drawn, or knocked out after the cut is made and the miners are ready to leave the place.

Such a system removes all danger of roof falls where the miner keeps his place in good order and takes the necessary precautions for his own safety. No coal is lost, and there is less dead-work caused by the presence of clay veins, which are often troublesome and greatly increase the expense in the room-and-pillar system, while in longwall-work they can often be left to gob themselves.

JOHN OLDROYD.

Farmington, W. Va.

Letter No. 12—Reading the numerous letters published in COAL AGE in reference to the application of the longwall method of mining to the working of the Pittsburgh seam in eastern Ohio impresses one with the idea that the scheme is impracticable at the present time.

While there is no doubt in my mind that the Pittsburgh seam can be worked successfully on the retreating plan of longwall, to which reference has been made, I believe there is more need at present of discovering a system of room-and-pillar mining that will increase the recovery of coal in this seam without adding to the cost of production. It is no time now to experiment on the adoption of the longwall method in this seam when labor conditions are so disturbed and the profit on coal is at a minimum. Let a more favorable opportunity be chosen for investigating this question, but for the present let us strive to reduce the large percentage of coal left in the seam by adopting some simple modification of the present plan of mining.

All the conditions affecting the mining of coal in the No. 8 seam are well known, and having this knowledge, it should be possible to estimate with considerable accuracy the probable cost of mining by any proposed method. Moreover, the longwall method has been tried on several occasions in this district, and one can ascertain by making inquiry what results have been obtained in its use. Owing to the large outlay of capital necessary for the development of the longwall *retreating* system, it is plain that the *advancing* method presents the only feasible plan.

In considering the general question of longwall, regard must be had to the fact that the hard limestone above the

Pittsburgh seam is separated from it by a stratum of soft slate of varying thickness. This makes it practically impossible to secure a break in the limestone which is so important and essential for the success of any longwall method of mining. As the coal is taken out, the soft slate immediately above it falls. The broken slate occupies more space than it did in the solid formation, and as a result there is not sufficient room for the settlement of the limestone to cause a break. There would be more chance of getting a break if the limestone laid directly above the coal, as it would then have a drop of practically 6 ft., or the thickness of the coal seam. Instead of this, however, the limestone now settles gradually onto the broken slate beneath, and no break occurs.

Some time ago Mr. Waddell, Letter No. 6, COAL AGE, Apr. 24, p. 732, stated that longwall was being used in various localities in Pennsylvania, West Virginia and at points on the Norfolk & Western Ry. He must remember, however, that those places have altogether different conditions of roof, coal and bottom and, moreover, that the labor conditions are frequently quite different from those in eastern Ohio, the latter being far from what might be desired. With unfavorable labor conditions and freight rates, the eastern Ohio operator must be quick to avail himself of the opportunity to profit by any suggestions that would enable him to recover a larger percentage of coal.

In my opinion, if such a thing had been possible, one of our district operators would have long ago devised a way for a larger recovery of coal in the working of this seam in eastern Ohio. At present they are anxiously awaiting some suggestion of a plan that bids fair to succeed. It is useless, however, to compare this district with work in the Fairmont field of West Virginia, where, under more favorable conditions, the operator is enabled to recover 95 per cent. of the coal in the seam. The eastern Ohio operator would be glad to recover 90 per cent. of his coal by any practicable method.

MINING ENGINEER.

Wheeling, W. Va.

Value of Coal Analyses

Referring to the inquiry on this subject by N. G. Near, COAL AGE, June 19, p. 1072, I may say that opinion is naturally divided on the points presented therein. It is common to hear criticism of this nature, and in the hope of convincing at least some skeptics I offer the following remarks.

Before taking up the subject matter, however, and for the benefit of many whose ideas of coal testing are, to say the least, vague, permit me to digress for a moment and give a brief outline of the scope of such an analysis. For example, a complete commercial coal analysis includes the following determinations:

Moisture—In bituminous coal this should not exceed 1 per cent.

Volatile Matter—This is not all combustible matter. Hence, a coal whose volatile products are more largely combustible has more heat value than a coal whose products are partly incombustible. Such incombustible volatile matter dilutes the combustible portion and, by absorbing some of the heat, lowers the heat value of the coal. This constituent cannot therefore be considered a reliable factor in determining the heat value of a coal.

Fixed Carbon—This is the free carbon content of the coal and is the chief source of heat when the coal is burned.

Ash—The ash is composed of the mineral content or impurities of coal and is, to a greater or less extent, a necessary loss in the production of power by the combustion of coal. The ash not only affects the heat value of the coal, but its final disposal involves a necessary additional expense. The nature of the ash (high or low fusing point) makes a great difference in stoking, by causing the formation of clinkers and destroying the grate-bars, which in many cases must be replaced at frequent intervals.

Sulphur—This constituent when found in coal is generally combined as iron pyrites. It is of course injurious and troublesome and acts to rapidly destroy the grate-bars of the furnace by combining with the iron.

Heat Value (B.t.u.)—The heat value of coal is measured, in this country, by the British thermal unit (B.t.u.) and is of the greatest importance in determining the value of coal for fuel purposes. This unit expresses the amount of heat required to raise 1 lb. of water 1 deg. Fahrenheit.

Lack of space will not permit of the discussion of the relative value of different coals used for fuel purposes, and it will therefore be necessary to consider only bituminous coal as used for steam purposes. With this preliminary, I will proceed to answer, as far as I may be able, the points suggested in this inquiry.

The mining of coal, in general throughout the country, follows a fixed method of procedure. The coal is broken from its bed in the underground workings of the mine, brought to the surface in mine cars and dumped over screens at the tipple into the waiting railroad cars. The arrangements for screening and cleaning the coal vary at different mines, and the results obtained, in this respect, depend largely or wholly on the equipment at the mine, the honesty of the operator supplemented by the capability of the superintendent and the thoroughness of the men engaged in this work.

Inasmuch as no two seams of coal are exactly alike in quality, and since other conditions under which the coal is mined vary widely, not only in different mines, but from time to time in the same mine, one can readily see that the quality of the coal loaded for shipment will vary widely. Under conditions most favorable to the purchaser of fuel, the value of the coal loaded in each car can only be determined by analyzing a carefully prepared sample of its contents. The uptodate mine, therefore, will check its shipments of coal from day to day by making analyses to ascertain that the operations in the mine are being conducted properly and that the specifications required by contract are being fulfilled.

While it is absolutely correct, as has been said, that "We can add nothing in value to the coal by testing the shipment," it is manifestly unfair to claim that "Such work is a pure loss of time and energy," and that the coal tester is a "nonproducer," as is sometimes stated. The argument is so weak that it hardly seems worth refuting. The best way, however, to convince anyone who is in doubt in this respect is to let him make a canvass of the large manufacturing and industrial concerns. Thousands of these concerns employ a force of chemists themselves or are regular patrons of the commercial laboratory. Ask any of these interests, and their instant reply would be,

"We employ no *nonproducers* in our laboratory, nor would we pay an outside commercial laboratory for testing what is of no *value* to us from a business standpoint."

In regard to the expense, I would say the cost of making such tests is not as great as many people seem to think. Many laboratories make a complete analysis for $6; or on a yearly contract the charge is about $4 per sample; while on a basis of one sample per week a yearly contract price of $200 is quoted. This certainly cannot be said to be an excessive cost when one considers that the loss on a few cars of coal of inferior quality will more than offset the bill of testing shipments for the entire year. Many plants are saving from $1000 to $10,000 or more per year by buying coal under proper specifications, while numerous other manufacturers who are not availing themselves of these privileges could save fully as much if they were alive to the importance of the work.

Inasmuch as fuel is one of the large and important expense items of every manufacturing and producing plant, the attention of all large purchasers of fuel should be directed to this matter. Other raw materials are given careful attention and the greatest care is exercised in guarding the quality by systematic analysis of the product, and the old assumption that "coal is coal" will not satisfy modern business methods. Today, the output of all other mines is sold on an analysis basis designed to determine the value of the mineral or its available contents. Coal is sold for its heat value and is therefore properly subject to the same conditions as other natural products.

Referring now to the final suggestion that "The solution of the problem is to be found in leaving the determination of the heat value of the coal to the mine operator," and the further statement that "Mine operators are not always the band of crooks so often claimed," it will be readily admitted that there is no "imputation of dishonesty" on the part of the seller because the purchaser desires to satisfy himself of the value of the product he buys. Such a method forms the underlying principle of all safe business. No honest dealer or operator will object to an analysis of the product he offers on the market.

In support of what I have said, permit me to cite a single incident of the large number of similar ones that have come under my personal observation. A 600-ton barge of coal recently shipped to a sugar refinery was instantly rejected on the report from their laboratory that the coal ran about 30 per cent. in ash. Out of curiosity to see where this shipment would finally land, it was followed, and the next day developed the fact that it was sold and unloaded at a plant across the river, which it is needless to say did not believe in testing fuel shipments. It would have astonished that manufacturer could he have discovered the amount of his loss.

Hundreds of other similar incidents could be quoted by anyone familiar with coal sampling and analyzing. When one reflects that millions of tons of coal of poor quality are mined and sold every year, the fact must be realized that much of this poor quality of fuel goes, of necessity, to the nontesting plants. It requires no argument to convince one that it would be an extremely poor business policy to leave this important matter, as suggested, entirely in the hands of the mine operator.

Not every plant could be benefited by testing their fuel purchases, because many are already getting the best coal possible for the price paid. But where the yearly consumption warrants. coal should either be purchased from a mine where the quality of its output is established, or purchased under fair specifications and each shipment tested to insure against loss.

Too much reliance is often placed in the practical knowledge and opinion of an engineer, who bases his opinion solely on the operation of the boilers. But under varying conditions of supply, coal cannot be judged correctly in this manner. Much more could be said; but I have offered these suggestions in the hope of throwing some light on a matter that is not appreciated as fully as its importance merits.

PERCY N. COUPLAND,
The Harris Laboratory.

New York City.

Education in Mining

Letter No. 1—I noted the suggestions of Karl F. Schoew, COAL AGE, June 12, p. 1034, urging the adoption of some practical plan for reaching miners in an educational way, and the account by John T. Bradley, Apr. 3, p. 611, of a successful mining class, I am led to offer the following remarks:

The value of vocational instruction as a means of increasing the efficiency and practical ability of men, as well as being a factor in the demonstration of the relative value and adaptability of technical ideas to the securing of practical results, has been shown through the industrial and educational departments of the Y. M. C. A. Under the supervision of this institution, a mining class was started in this place in November, 1913, and conducted for a period of six months, with sessions held twice a week. The prime object of the undertaking was to give such instruction in mining as would enable those who were ambitious to take the annual examination for mine foreman, assistant mine foreman and fireboss. Out of a class of twelve, five had the ambition and perseverance to continue to the close of the term.

The method of instruction used differed somewhat from that generally employed in this class of work. The instructor in charge of the class had learned from his own personal experience and that of others that the majority of those who studied the subject of coal mining with the object of securing a certificate of competency were men of comparatively small educational attainments and for this reason made the study of the subject a matter of *memory* and not a matter of *reason*. They committed *facts* to memory, but did not attempt to find out the reason for them. The instructor was but little better equipped in educational advantages than were his pupils, but he had discovered one important fact with respect to the study of mining; namely, that the employment of the faculty of reason was far more productive in the acquirement of technical and practical knowledge than was that of memory.

Believing that the best method of instruction to adopt was to present the subject matter in plain, simple language, and to explain each fact in a clear, concise way so as to show why it was true, he always tried to induce original investigation by asking questions to show the effects and to explain the simple, elementary laws they were being taught. The course of instruction was based on these principles and methods.

No reference books on mining were used in the class, not because books are not valuable, but for the simple

reason that most textbooks did not explain the subject in a simple way, but made use of technical terms and expressions with which mine workers are unfamiliar.

That the method adopted was successful was shown by the fact that the five who presented themselves for examination in 1914 succeeded in securing certificates and that four of the class of five the following year were awarded certificates.

The Y. M. C. A. is to be congratulated on the success of its educational work in this place, not only in that of mining, but in other departments as well, and this success is to be largely attributed to the efficient management of its representative, Samuel Calverly. The only thing to be regretted is that the efforts put forth have not met with as hearty support as they deserve from those whom they were intended to benefit. It is to be sincerely hoped that coal miners may be brought to realize more fully the value and help of education in their daily work, enabling them to produce better results with less labor and in less time. The man who has trained himself to think and act in accordance with his reason has educated himself and will always excel one who performs mere physical labor. Labor is noble and dignified, but to be so it must be intelligent.

A. M. INER.

——, Penn.

Air Factor in Mine Explosions

Letter No. 1—I have read with great interest the article entitled "The Air Factor in Dust Explosions," by John Verner, COAL AGE, May 29, p. 922. I can say that I heartily agree with Mr. Verner in many of the statements made and conclusions reached by him in the study of this question. I desire, however, to take exception to one of these statements.

Mr. Verner gives as the three essential factors in the production of explosive-dust combustion the following: "1. Flame. 2. Combustible dust. 3. An air current or draft toward the source of heat, to bring the dust and air in contact with the flame."

One would infer from this statement that the air current or draft toward the source of heat is here understood to be a *factor* or the *cause* of the combustion; while, as a matter of fact, such air current or draft, as Mr. Verner explains later, is the direct *result* of the combustion.

I would suggest, therefore, that the three essential factors for explosive-dust combustion should be stated as follows: 1. Flame. 2. Combustible dust in suspension. 3. Sufficient air or oxygen to support combustion.

EDW. H. COXE.

Knoxville, Tenn.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

Specific Density—The term "specific density" expresses the ratio of the density of any elementary substance to that of the element **hydrogen,** which being the lightest of the known elements is taken as unity (H = 1). The **atomic weight** of an element referred to hydrogen is therefore the specific density of that element.

Density—The term "density" as applied to substances is used in two ways: 1. To express the **relative weight** of a substance with respect to hydrogen, volume for volume. 2. To express the **unit weight** (lb. per cu.ft.) of a substance. The density of an elementary substance is expressed by its atomic weight referred to hydrogen as unity. The density of a compound substance is equal to one-half of its molecular weight.

Specific or Atomic Volume—These terms have reference to an assumed unit volume for all gases, which **unit** is the assumed volume of a single gaseous atom.

Avogadro's Law of Gaseous Volume—This law may be stated briefly and clearly as follows:

At the same temperature and pressure all gaseous molecules are assumed to be of the same size.

With a few unimportant exceptions, this law applies to all gases, whether simple or compound. It holds true for all mine gases and is important in the calculation of the relative volumes of gases concerned in chemical reactions.

Molecular Volume—Chemical hypothesis assumes that the molecules of simple substances each contain two atoms only, while the molecules of a compound substance may contain any number of atoms, but never less than two. Notwithstanding this multiplicity of atoms, Avogadro's law makes all gases, with a few unimportant exceptions, to contain the same number of molecules, per unit volume, when measured at the same temperature and pressure.

Specific Heat—Investigation has shown that the same quantity of heat imparted to equal weights of different substances does not produce the same rise of temperature in each substance. Also, equal weights of different substances when cooling give out different quantities of heat for each degree the temperature falls. These facts show that different substances have different capacities for absorbing and holding heat as **sensible heat** causing a rise of temperature.

The "specific heat" of any substance is its **relative heat capacity,** or its heat capacity referred to that of an equal weight of pure water. The **unit of heat** is the amount of heat required to raise the temperature of a unit weight of water one degree. Therefore, the specific heat of a substance being referred to water expresses the heat units requird to raise the temperature of a unit weight of the substance one degree.

The **specific heat of a solid** or liquid always refers to the heat per unit weight. The **specific heat of a gas** may be referred to the unit weight or unit volume, as desired. The specific heat of air and gases is different according as the air or gas is confined (constant volume) or is allowed to expand (constant pressure). The specific heat of a gas for "equal volumes" is the heat capacity of the gas referred to that of an equal volume of air at the same temperature and pressure.

The Coal Age Pocket Book

The following table gives the specific heats of a few of the common solids and liquids of interest in mining:

SPECIFIC HEATS OF SOLIDS AND LIQUIDS

Substance	Temperature, Deg. Fahr.	Specific Heat
Aluminum	60-1150	0.2145-0.3077
Copper	32-1650	0.0933-0.1259
Iron	32-1100	0.1050-0.1989
Lead	60- 600	0.0299-0.0338
Lead (melting point 610° F.)	610- 680	0.0356-0.0410
Mercury	32- 500	0.0334-0.0320
Platinum	60- 210	0.0324
Silver	32-1200	0.0559-0.0750
Tin	32- 210	0.0545
Zinc	32- 700	0.0935-0.1220

The specific heat of all substances varies more or less with the temperature as appears in the above table. In the case of gases, the increase per degree (Fahr.) above zero is roughly estimated as follows: Air, nitrogen, carbon monoxide, 0.000012; oxygen, 0.00001; carbon dioxide, 0.00006; hydrogen, 0.0002; and water vapor, 0.0001; etc.

The following table gives the specific heats of the common mine gases, for equal weights at constant pressure and constant volume, and for equal volumes under constant pressure:

SPECIFIC HEATS OF AIR, MINE GASES AND VAPORS

Substance	Equal Weights—Const. Pres.	Equal Weights—Const. Vol.	Equal Volumes Const. Pres.
Air	0.2374	0.1689	0.2374
Methane	0.5929	0.4219	0.3314
Olefiant gas	0.4040	0.2875	0.3951
Carbon monoxide	0.2450	0.1743	0.2369
Carbon dioxide	0.2163	0.1539	0.3307
Hydrogen sulphide	0.2432	0.1731	0.2897
Oxygen	0.2175	0.1548	0.2405
Nitrogen	0.2438	0.1735	0.2368
Hydrogen	3.4090	2.4260	0.2361
Water vapor	0.4805	0.3419	0.2996
Ammonia	0.5080	0.3615	0.2992

When gas, air or vapor is free to expand (constant pressure) heat is absorbed and becomes latent. For this reason more heat is required to produce the same rise of temperature when expansion occurs than when the volume remains constant, and the specific heats in the first column are therefore higher than those in the second column of the table given above.

The values given in the first column of this table have been determined by experiment directly, while those in the second column have been derived from the first by dividing the latter by 1.405, the ratio of the specific heat of gases at constant pressure to that at constant volume. Likewise, the values given in the third column have been derived from those in the first by multiplying the latter by the specific gravity of the gas or vapor referred to air.

Inquiries of General Interest

Laws Regulating Explosives

I want to ask if there are any laws regulating the manufacture, sale and use of explosives, other than the state laws, in Pennsylvania. I am particularly interested in ascertaining if there is any law that defines the minimum distance at which a magazine for the storage of explosives may be located from inhabited dwellings, public roads, etc., similar to the provisions made in this respect in the laws of Massachusetts.

Sim. C. Reynolds, Safety Inspector,
Aetna Life Insurance Co.

Houston, Penn.

The following reply to this question has been sent by Arthur L. H. Street, Attorney and Counsellor at Law, St. Paul, Minn.

Aside from state laws, the only regulations on this subject will probably be found in the ordinances of cities and towns. For instance, on April 2, 1901, an ordinance was adopted in Philadelphia, Penn., regulating the manufacture, sale, storage and use of high explosives within the city, by requiring licenses to be obtained from the mayor, and prohibiting the keeping of such explosives within 300 feet of churches, schools, public buildings, etc. Similar ordinances have been enacted in most of the cities of the country. For information concerning these local regulations inquiry should be sent to the clerk of the city in or near which it is desired to store or use explosives.

Interchange of Certificates of Competency

We have had considerable discussion recently on the question as to whether a mine manager's (mine foreman's) certificate issued by the examining board in Illinois will be accepted for a similar position at any place in Canada or whether any of the certificates of competency issued by the examining boards in any of the states are good in any of the provinces of Canada? Kindly state which, if any, of the Canadian provinces will accept of such certificates and from what states they must come, and to whom application must be made.

JOHN MCMILLAN.

Gillespie, Ill.

The only province in Canada that, to our knowledge, recognizes a certificate of competency granted in another state or country is the Province of Alberta. The third paragraph of chap. 4, sec. 21, of the Alberta mining laws reads as follows:

> The chief inspector of mines may sign and deliver a certificate, without examination, to any person holding a certificate from any other country, providing the board of examiners reports that the standard of training and examination required for the granting of such certificate is equivalent to that required for the granting of a corresponding certificate under this act.

This law went into effect August, 1913. It applies alike to all the states where examinations are held and certificates issued by the state examining board. But the standard of such examination must be judged by the examining board of Alberta and its decision accepted as final. We believe that the standard of requirements for a mine-manager's (mine-foreman's) certificate in Illinois is fully equal to the requirements in Alberta and that the holder of such a certificate in Illinois would be indorsed as competent to hold a similar position in that province, upon making application to the chief mine inspector of Alberta.

Effect of Poor Ventilation on Safety-Lamp Flame

In a heading in a mine where the ventilation is very poor, but where there is no gas, either carbon dioxide (CO_2) or marsh gas (CH_4), being generated or that can be detected, what effect if any would be observable on the flame of a safety lamp owing to the slack ventilation? The gob in this place is somewhat heated.

FIREBOSS.

——, Penn.

In answering this question it is necessary to consider carefully the effect the slack ventilation, together with the heated condition of the gob, will have on the mine air in the place. The heating of the gob indicates the slow combustion of the fine coal in the waste. This combustion occurring in a slack air current in a confined space undoubtedly consumes considerable of the oxygen of the air, which is thus somewhat depleted of its oxygen content. In addition to this, it is possible that there is a slight amount of carbon monoxide present, produced by the combustion in a limited supply of air. The percentage of this gas, however, is probably inappreciable as long as some air is moving in the place.

The effect on the flame of a lamp burning in air partly depleted of its oxygen is to lengthen the flame of the lamp, which in its endeavor to obtain the necessary oxygen for its combustion reaches upward in a slim, taper-like blaze. The presence of carbon monoxide in the air, even though the amount is inappreciable, helps to lengthen the flame of the lamp. This effect would be much less if there was any carbon dioxide present. The latter gas being extinctive in its effect on flame would act to reduce the size of the flame and counteract the effect just described as due to the deplction of the oxygen and the possible presence of carbon monoxide.

It is a matter of common experience to observe this reaching upward of the flame of a common open light in a place void of proper ventilation, especially where there are evidences that slow combustion is taking place in the gob. This effect has been described, in earlier textbooks of mining, as due wholly to the presence of carbon monoxide, which is assumed to be present in the air owing to the combustion going on in a limited air supply.

Examination Questions

Montana Mine Foremen's and Firebosses' Examination Held at Red Lodge, June 8-10, 1915

(*Selected Questions*)

Ques.—Of what is atmospheric air composed?

Ans.—Normal atmospheric air is composed chiefly of a mechanical mixture of nitrogen and oxygen gases, together with smaller quantities of carbon dioxide, water vapor, argon and traces of ammonia. Its composition is practically as follows: By volume, oxygen, 20.9 per cent.; nitrogen, 79.1 per cent. By weight, oxygen, 23 per cent.; nitrogen, 77 per cent. The carbon dioxide (CO_2) in normal air, is generally stated as four parts in 10,000 or 0.04 per cent.

Ques.—Give the names, chemical symbols and composition of the different gases met with in coal mines.

Ans.—The common mine gases are the following:

Methane or marsh gas (CH_4): composition, carbon one atom; hydrogen, four atoms.

Ethene or olefiant gas (C_2H_4): composition, carbon, two atoms; hydrogen, four atoms.

Ethane (C_2H_6): composition, carbon, two atoms; hydrogen, six atoms.

Carbon monoxide (CO): composition, carbon one atom; oxygen, one atom.

Carbon dioxide (CO_2): composition, carbon, one atom; oxygen, two atoms.

Hydrogen sulphide (H_2S): composition, hydrogen, two atoms; sulphur, one atom.

Besides these may be mentioned the elementary gasses forming the atmosphere, oxygen (O) and nitrogen (N); and hydrogen (H), which enters into the composition of so many of the mine gases, although not ordinarily found as a free gas in mines.

Ques.—What noxious gases are produced by fires and explosions of firedamp in mines?

Ans.—The combustion incident to a fire or explosion of firedamp consumes much of the oxygen of the mine air, and as a result the products of such combustion may be stated as follows: Carbon dioxide (CO_2); carbon monoxide (CO); water vapor (H_2O); nitrogen (N_2). The relative amounts of carbon dioxide and carbon monoxide produced will depend on the available oxygen present to support the combustion. In a limited supply of air (oxygen) the combustion is more or less incomplete, and a less quantity of carbon dioxide and a greater quantity of carbon monoxide are produced, besides a larger relative proportion of nitrogen. Frequently, also, variable amounts of unburned methane (CH_4) and hydrogen (H_2) and at times small quantities of olefiant gas (C_2H_4) are found.

Ques.—Describe the dangers attending the presence of gases met with in coal mines.

Ans.—The presence of the gases in mine air dilutes the air and thus reduces the proportion of oxygen, which is necessary to support life and maintain healthful conditions in the mine. Some of these gases, as carbon monoxide (CO) and sulphureted hydrogen (H_2S) are extremely poisonous in their effect on the human system. Carbon dioxide also has a toxic effect on the system. Other gases when present in sufficient quantities produce suffocation, although not poisonous in their action on the system. This is the case with the hydrocarbon gases and nitrogen. Others of the mine gases are combustile and form inflammable or explosive mixtures with the mine air. The inflammable and explosive gases are: Methane (CH_4); carbon monoxide (CO); and hydrogen sulphide (H_2S).

Ques.—How are mine gases detected?

Ans.—Briefly, methane and carbon dioxide are detected in mines by the effect they produce on the lamp flame. In the detection of methane, a safety lamp must be used to avoid the ignition of the gas. Pure methane unmixed with air or containing but a small proportion of air may extinguish the flame of the lamp. When the proportion of air and gas is such that the mixture is inflammable, the volume of the flame is enlarged and it has an unsteady motion. With larger proportions of air or a smaller percentage of gas, a flame cap is observed surmounting the lamp flame. This is caused by the burning of the gas present in the air and in contact with the flame.

Carbon dioxide dims the flame of a lamp and when present in larger proportions extinguishes the flame completely.

Carbon monoxide being extremely poisonous and deadly in its effect, when present in air in too small a proportion to produce an appreciable effect on the flame must be detected by observing its effect on small animals, such as birds and mice, which are prostrated in a much shorter time than is required to produce a like effect on persons.

Hydrogen sulphide, though seldom present in sufficient quantity in mine workings, is best detected by its disagreeable odor, which resembles that of rotten eggs.

Ques.—How many cubic feet of air would be necessary to dilute and render harmless 500 cu.ft. of marsh gas (CH_4)?

Ans.—The answer to this question depends on the condition of the mine both with respect to dust and the inflammable nature of the coal. Where the mine is dusty and the coal inflammable the proportion of gas should not exceed 1 per cent. and may often be required to be much less than this to secure the safety of the mine and the men employed therein. Where the coal is harder, and there is less fine dust formed in the workings, the percentage of gas may safely reach 2 per cent.

But assuming a 1-per cent. limit for the gas, the total circulation (air and gas) would be, in this case, $500 \div 0.01 = 50{,}000$ cu.ft. per min. when the mine is generating 500 cu.ft. per min. The volume of air required to *dilute* 500 cu.ft. of marsh gas, under these conditions, would be $50{,}000 - 500 = 49{,}500$ cu.ft. of air.

Coal and Coke News

Washington, D. C.

Secretary Lane of the Interior Department after exhaustive hearings attended by the various disputants in the Oklahoma oil land lease matter, on June 17 announced his decision in the question of the socalled Foster lease covering 680,000 acres in the Osage Indian reservation which will expire on Mar. 16, 1916. The Foster lease is now owned by the Indian Territory Illuminating Oil Co. which has subleased the oil lands to a number of producers.

The Indian Territory Illuminating Oil Co. is to be eliminated as an intermediary and the sublessees are to lease direct. Oil and gas rights are to be leased separately and for terms of five years from date of approval by the Secretary of the Interior and as much longer thereafter as oil is found in paying quantities but the term shall not extend beyond the time the title to the minerals remains in the Osage Indian tribe.

Sublessees now holding land under the Foster lease will be given an opportunity to lease direct subject to the 4800 acre limitation of the law. Quarter section units, however, which are capable of producing 25 bbl. or more a day July 1, 1915, will be withheld and with the land not taken up by the sublessees will be offered for lease at public auction under rules to be prescribed by the Secretary of the Interior.

All oil leases will provide that the government may have an option to purchase all oil produced at the highest posted market price on the day of sale. Leases will be made on a royalty of one-sixth of the production, except where the wells in any quarter section shall produce 100 bbl. a day for a calendar month period, when the royalty will be one-fifth.

Unless lands are developed within one year after the approval of a lease by the Secretary of the Interior, the lessees shall pay $1 an acre a year. The plan provides for the making of gas leases to the present gas lessees for such periods as the Secretary of the Interior may determine, at a royalty of one-sixth, and provides that all contracts for the sale or use of gas shall be subject to the Secretary' approval.

The present oil sublessees must file their acceptance of the new terms before Aug. 1, 1915, and after that date all land open will be offered to the highest bidder.

Government Wins Favorable Decision

It was announced on June 21 that the Supreme Court of the United States had handed down a decision in the case of the United States against the Delaware, Lackawanna & Western Ry. Co., favorable to the contentions of the government. The suit was brought in connection with the socalled commodities clause of the interstate commerce act. This provision, it was claimed, was being violated by the plan of selling coal at the mine mouth to a coal company which disposed of the product and subsequently shipped it over the road.

It was originally contended that an exclusive contract of this kind was monopolistic and hence against the law. The district court for New Jersey had rendered a previous decision dismissing the suit. The question at issue necessarily turned chiefly about the legality of the plan for disposing of the coal. The text of the decision in the case will be made available within a few days, and will afford full information regarding the grounds upon which the verdict has been prepared and rendered.

PENNSYLVANIA

Anthracite

Pottsville—With the new Dawson coal tax act now effective rumors are already heard of suits on the part of municipalities and townships in this county which do not actually produce coal, but are desirous of sharing in the proceeds of the tax as they were entitled to do under the Roney act of two years ago. The question has arisen as to whether this city will receive a sufficient proportion of the tax to make it of consequence to the finances of the community. The whole trouble arises from the fact that the new law specifically states that the tax shall be apportioned to the districts in which the coal is mined and this will shut out a majority of the towns and townships in the county from a participation in the tax proceeds.

Pittston—No. 5 shaft team will represent the South Pittston district of the Pennsylvania Coal Co. in the annual intercompany first aid contests at Inkerman in September. The team made the average of 95 per cent. in the district elimination contests. Peter Hoolihan, of No. 5 team, is the district's entrant in the one-man contest.

Shamokin—The collieries of the Lehigh Valley Coal Co. will be idle on Aug. 21, since that is the date which has been selected for the annual outing of the Social Association of Lehigh Valley Employees. The outing this year will be held at Edgewood Park, Shamokin, instead of at Hazle Park, Hazleton. A special train will be run from Pittston and Wilkes-Barre to Shamokin. Salaried employees of the Lehigh Valley Coal Co. compose the Social Association.

Wilkes-Barre—A section in the central portion of Parsons about half an acre in extent recently settled about 20 ft. in a mine cave, occurring over an abandoned working of the Delaware & Hudson Co. A storehouse and a garage together with several other buildings dropped into the opening. Steps were immediately taken to prevent further caving.

Bituminous

Clearfield—Despite reports to the contrary, officials of the Sommerville Coal Co., which has large operations in this vicinity, have denied the story to the effect that it intended opening up large coal fields at Gazzam, and putting in an extension on the New York Central for the purpose. It was explained that the company had been prospecting in and around Gazzam but had found the field wanting.

Connellsville—The production of coke from the Connellsville region recently attained 334,000 tons per week with shipments of approximately 332,000 tons. This was an increase of 20,000 tons in production and 11,000 tons in shipments over the previous week. The steel interests are operating about 72 per cent. of their ovens in the Connellsville region.

One thousand additional coke ovens have been fired in this territory by the H. C. Frick Coke Co. The starting of these ovens means employment for many more men. With a total of 19,224 ovens the Frick company has now 12,895 in operation.

Uniontown—Orders have been issued to have the Isabella mines of the Isabella-Connellsville Coke Co. in Fayette County near Uniontown, placed in operation at full capacity for the remainder of the year or until further orders. This plant has been completely closed since last June and the houses have been empty for that period. At this plant there are 260 ovens, 136 being of the rectangular type and 124 beehive ovens. The Isabella plant is one of the Kuhn properties, being owned by the same interests which own the West Penn traction and electric system. Sometime ago it went into a receivership.

Johnstown—Stockholders of the Greenwich Coal & Coke Co. which has extensive operations in Cambria, Blair, and Indiana Counties (Penn) have sanctioned a movement to take over the stock, consolidate the interests and change the name of the Tunnel Coaling Co., which has mines in Cambria County, the officers to remain as before the change. The Greenwich Coal & Coke Co. operations are working about 60 per cent. of capacity. There are nine mines in the three counties and only one, a small one, is closed. Work will be started shortly on the installation of a ventilating plant to replace the one at Yellow Run shaft at Dunlo, Cambria County.

Dawson—Announcement has been published stating that the Washington Coal & Coke Co. is sharing in the war orders for fuel placed in this country by brokers. The contract so far as could be learned from officials of the company calls for a delivery of 1500 tons daily for a year. The coal is being shipped to Baltimore and from there it is believed to be consigned to Italy. The producers state positively that they do not know where the coal is being shipped and care less. This company is now operating 700 of its 1000 coke ovens and maintaining its 70 per cent. capacity.

WEST VIRGINIA

Logan—President Cary, of the Lorain Coal & Dock Co., announces satisfactory progress in developing the large tract of land recently acquired in the Island Creek district in West

Virginia. A tipple containing five tracks has been constructed, and equipped to make any kind of coal desired. The production of the mine in June will likely be 10,000 tons and it is planned to double that output during July. In August it is expected to mine from 1000 to 1200 tons daily. The mine as well as the mining town has been named Lorado. It is located 24 miles southwest of Logan, the county seat of Logan County.

Huntington—The West Virginia Coal Association composed of coal operators has established offices on the 8th floor of the Robson-Pritchard Bldg. The suite comprises four rooms on the northeast side of the building. W. H. Cunningham and G. C. McIntosh are in charge of these offices.

Charleston—During the month of May, 22 miners were killed in the mines of West Virginia. Although this record is lower by 6 than that of May for 1914, during which 28 miners met their death, Chief Mine Inspector Earl A. Henry declares that his department is exerting every effort to reduce the fatalities. He has requested that each and every operator in the state coöperate with the department in using every possible means to reduce the number of accidents.

Bluefield—The coal tonnage from the Norfolk & Western field in the month of May not only made a record for the year 1915, but a record which has only been surpassed three times in the entire history of the field or during the months of July, August and September of 1914. The output for all the mines in the field in May was 2,434,614 tons, exceeding the tonnage for April by 234,063 tons. The heaviest tonnage ever handled by the Norfolk & Western was moved in September 1914, when 2,509,916 tons were transported. Shipments thus far in June are reported as heavy, and it is generally predicted that this month will prove the banner month in the field's entire history. The Virginian R.R. also made a considerable increase in its coal tonnage during the month of May, its business amounting to 352,750 tons as compared with 309,427 tons in April, showing a gain of 43,323 tons.

ALABAMA

Birmingham—The annual outing of the Alabama Coal Mine Officials under the auspices of the Alabama Coal Operators' Association, will be held at the Edgewater mines of the Tennessee Coal, Iron & R.R. Co., July 10. This outing will be in the nature of an Institute for the education and instruction of those invited; consequently the number of invitations will be limited to the capacity of the auditorium at Edgewater, and only the executive and operating officials of the Alabama Coal Operators' Association will be asked to attend the meeting.

KENTUCKY

Lexington—Coal interests here have been much interested by the announcement of the discovery of a new bed of coal in Bell County, Ky., when Capts. Gunn and Rennebaum were opening up a new mine at Logmont. This vein is described as being 6 ft. 11 in., in thickness, with no partings of any kind in the seam, which is of fine quality. It is reported to be high in heat content and low in ash and to be one of the richest veins opened in Bell County, if not the whole eastern section of the state.

Jenkins—The Consolidation Coal Co. recently put 200 extra miners to work in its plants in Jenkins and McRoberts. Beginning July 1, it will make another increase in the output. On that date it is said all the mines in the Elkhorn field will be running.

Frankfort—Ownership of 25,400 acres of coal and timber land in Perry County was settled by a suit recently decided in the Court of Appeals at Frankfort, the decision going to Thomas C. Millard and others in their suit against the Kypadel Coal & Lumber Co., the highest state court affirming the Perry Circuit Court.

Praise—The Eastern Kentucky Block Coal & Fuel Co. announces that the first shipments will be made over the Carolina, Clinchfield & Ohio railroad July 1, destined for the markets of the South Atlantic seacoast. It will ship 1000 tons daily until the work advances. Extensions and increases will then be made.

Fleming—The Elk Horn Coal Corporation recently started 200 extra miners to work in the plants around Fleming. A good increase in coal shipments will follow. There is much industrial activity all over the eastern Kentucky coal fields.

OHIO

Floodwood—The power plant erected at Floodwood, Ohio by the Southern Electric Producing Co. has three large generators installed with a capacity of 6000 kw. Contracts have been made with 10 operating coal companies in this vicinity to furnish power for mining and other contracts mill be made later on. In addition to the plant at Floodwood, the same syndicate has plants in other places as follows; the Hocking Power Co. at Nelsonville; the Mutual Electric Co. at Middleport and the Athens Electric Co. at Athens. Later on it is planned to operate all of the power plants under a holding company to be styled the Ohio Electric Secureties Co.

Columbus—Since the settlement of the strike in the eastern Ohio district there has been some question about the interpretation of Rule 7 of the Miners' scale. The question of the duties of the pit committee has been the subject of dispute on innumerable occasions so the joint committee representing the miners and operators agreed on the following interpretation of the rule: Rule 7. The pit committee shall be limited to not more than three (3) members, one or more of whom shall be able to speak the English language. They shall remain at their working places the same as all other employees unless a miner and a mine boss fail to agree on prices to be paid for extra work, when they may be called in to confer with the mine boss or superintendent to decide the dispute. This, however, shall not prevent the committee from looking after the proper interests pertaining to the miners' organization. The interpretation of the Joint Scale Committee of the last clause in Rule (7) is that it does not extend the privelege of the mine committee beyond the limitation of the rule, and shall not be construed to give it any authority to interfere with the operation of the mine or proper discipline of the men. The term "proper interests pertaining to the miners' organization" is understood to mean, looking after membership in the local union, check members, union dues, or serving as interpreter if called upon, and is held to apply exclusively to the internal affairs of the United Mine Workers.

A movement has been started, fostered by John H. Winder, general manager of the Sunday Creek Coal Co., for a stronger association of operators in the Hocking Valley and eventually in the whole state. It is hoped to produce out of the chaotic condition of the coal trade in Ohio, some semblance of order and methods, which will be beneficial to the coal trade generally. This movement is modeled after the organization recently formed called the Splint and Gas Coal Operator's Association of West Virginia.

Steubenville—One of the developments in the projects of the two Columbus coal concerns to prosecute stripping operations in Jefferson County, Ohio, along the line of the Wabash R.R. is a movement to have an injunction issued by the courts to stop operations before they are started. Some of the farmers in the neighborhood of the lands owned by the New Method Coal Co. and the Piney Fork Coal Co. claim that the stripping operations will ruin their farms.

Martins Ferry—The Florence mine of the Youghiogheny & Ohio Coal Co. near here recently resumed operation for the first time since the eastern Ohio strike was settled. Minor difficulties between operators and men prevented an earlier start. This mine employs approximately 300 men when running at full capacity.

It is predicted that within 30 days every coal mine in eastern Ohio will be working full time, and will continue to so work. At present 46 mines are working and 38 are idle in this sub-district, while a number of the idle mines are preparing to resume work.

INDIANA

Petersburg—The S. W. Little coal mines at Little, which have been idle for several weeks have resumed operation, employing 150 men.

Boonville—The miners employed at the Caledonian coal mine have organized a coöperative association and have taken over the mine property.

ILLINOIS

Champaign—The Illinois Miners' and Mechanics' Institute is conducting a short course in coal mining at the the University of Illinois, which is to continue until July 17. The course is particularly useful to those who desire to apply to the State Mining Board for certification to the position of state mine inspector, mine manager, mine examiner and hoisting engineer.

Staunton—Plans have been made for wrecking the De Camp mine soon. A force is now engaged in taking out material from underground, after which the top works will be dismantled.

Percy—The mines at Willisville have been closed down for about 60 days, throwing approximately 300 men out of work. At a recent meeting of the miners' union at Percy, it was decided to share up with the men at Willisville. Accordingly about 125 were given places in the mine.

ARKANSAS

Fort Smith—Sixty-eight defendants in the Bache-Denman coal syndicate suit for $1,250,000 damages for the destruc-

tion of property during the prairie Creek riot of one year ago, have recently filed a motion in the United States District Court to vacate the order for the appointment of a receiver for the syndicate which filed voluntary receivership proceedings following the riot.

IDAHO

Lewiston—The Brew Coal Co. has taken over the old Spring coal mine at Lewiston and will commence operations shortly.

FOREIGN NEWS

Nanaimo, B. C.—Four more bodies of miners, victims of an explosion in the mine of the Western Fuel Co. property, have been recovered. There were 22 deaths in all, the explosion occurring on May 28.

Crows Nest Pass, Alta.—The Corbin Coal & Coke Co., owned by D. C. Corbin, of Spokane, has been shut down for the summer, and the entire crew, excepting the men on the steam shovels, has been discharged. These men were retained for surface development work.

Hillcrest, Alta.—The mines of the Hillcrest Collieries, Ltd., at Hillcrest, Alta., were closed down on the 15th inst., the British miners refusing to work until 100 Austrians and Germans employed were discharged. The movement against alien enemies is spreading throughout the West, and trouble is expected at Frank Blairmore and other mining centers.

PERSONALS

E. W. Mansfield was recently appointed by Chief Mine Inspector Shiflett, as district inspector for Middle, Tennessee.

Richard Coulter was recently elected to the presidency of the Keystone Coal & Coke Co., of Greensburg, Penn., to fill the vacancy caused by the death of the late Lloyd C. House.

P. F. Mitchell, mine foreman at the E. F. Stackhouse colliery, Shickshinny, Penn., has gone to Lake Kathlyn, British Columbia, where he will superintend the opening of an anthracite mine.

Cadwallader Evans recently resigned his position as general manager of the Arcadia Coal Co., Ltd., of Stellarton, N. S., and his present address is the Union Oil Bldg., Los Angeles, Calif. Mr. Evans is at present taking a needed rest.

Charles Fox, formerly secretary-treasurer of the United Mine Workers of America, district 11, and now president of the Indiana State Federation of Labor is to be one of the deputy mine inspectors under Michael Scollard, the new state mine inspector.

John Zelenka, secretary of the Pittsburgh Vein Operators of Ohio, with headquarters at Wheeling, W. Va., was recently reëlected at a meeting of the association. W. R. Woodford, president, S. H. Robbins, vice-president, and C. W. Troll, treasurer, were reëlected at the same meeting.

E. W. Stone, federal receiver for the Wyoming Coal Mining Co. since June 25, 1914, has been discharged by the federal court at Cheyenne and the property returned to the company. All outstanding indebtedness is to be paid in full. The company is one of the largest operators in the Sheridan field and owns property valued at about a million dollars.

E. C. Roberts, Jr., has formally resigned his position as resident manager of the Fairmount Coal Co.'s mines, since enlisting in the Canadian Contingent of the British Army. He goes as an officer and swears allegiance to the King only during service. This permits him to resign at any time without prejudice to him in any way. He is now at the camp in Niagara-on-the-Lake.

OBITUARY

Edwin E. Randall, aged 55 years, formerly superintendent of the Schooley mine of the Pennsylvania Coal Co. at Wyoming, Penn., died recently at Dayton, Tex., where he was employed by the New York Construction Co.

Captain George Ormrod died in Allentown, Penn., June 21, of heart disease at the age of 76 pears. He was born in Preston, England, coming to America when 20 years old. Captain Ormrod became a coal operator and was located at Raven Run during the "Molly Maguire" trouble in the '70s. For years past he has been head of the Donaldson Iron Works and vice-president of the Lehigh Portland Cement Co. Captain Ormrod was a member of the Franklin Institute and the American Institute of Mining Engineers. He is survived by five children.

Patrick Clark of Spokane, a well-known western mining man, died rather suddenly recently at the age of 65. He learned his trade as a coal miner in Scotland, emigrated to the States, worked in the Hoosac tunnel, on the Comstock lode, sank the first shaft on the Anaconda and discovered it was a copper and not a silver mine. He built the first plant for milling the galena ores of the Cour d'Alenes and discovered and at one time owned the famous War Eagle Mine at Rossland which has produced $30,000,000 in gold and is still producing $3,000,000 a year.

TRADE CATALOGS

The United Lead Co., 111 Broadway, New York. "Ulcoloy." Eleven pages, 3½x6 in., unillustrated.

Dodge Sales and Engineering Co., Mishawaka, Ind. Catalog. "Gearing." Illustrated, 126 pp., 6x9 in.

Scranton Pump Co., Scranton, Penn. Bulletin 102. "Duplex Plunger Pumps." Illustrated, 12 pp., 6x9 in.

The Borderland Coal Sales Co., Cincinnati, Ohio. "Borderland Coal." Thirty-two pages, 8x11 in., illustrated.

Arthur A. Zelnicker Supply Co., St. Louis, Mo. "Zelnicker's Bulletin, No. 174." Four pages, 3½x8 in., unillustrated.

International Mill & Timber Co., Bay City, Mich. Catalog. "Sterling System-Built Houses." Illustrated, 72 pp., 9x12 in.

The Cortwright Coal Co., Pennsylvania Bldg., Philadelphia, Penn. "Our Green Book." Four pages, 5x7 in., unillustrated.

The Sylvester Co., Parkersburg, W. Va. Bulletin No. 1. "The Sylat Timber Puller." Twelve pages, 10x8 in., illustrated.

The Waterbury Co., 80 South St., New York. "Waterbury Fiber-Clad Wire Rope." Twenty-three pages, 3½x6 in., illustrated.

The Esterline Co., Indianapolis, Ind. "Golden Glow Incandescent Headlights." Catalog No. 364, 32 pages, 6x9 in., illustrated.

Chicago Pneumatic Tool Co., Bulletin 34 X. "Class A. G. Giant Gas and Gasoline Engines." Eight pages, 6x9 in., illustrated.

Link-Belt Co., Philadelphia, Penn. Bulletin No. 221. "Circular Storage System for Storing Coal, Etc." Illustrated, 4 pp., 6x9 in.

Gifford-Wood Co., Hudson, N. Y. Bulletin No. 16. "Portable Wagon Loaders for Handling Coal, Etc." Illustrated, 12 pp., 6x9 in.

The Locomobile Co. of America, Bridgeport, Conn., U. S. A. "Locomobile Worm Drive Truck." Forty-two pages, 8¾x11½ in., illustrated.

The Waterbury Co., 80 South St., New York. "Waterbury Armored Rope for Long, Hard Service." Thirty-two pages, 3½x6 in., illustrated.

Link-Belt Co., Philadelphia, Penn. Book No. 210. "Wagon and Truck Loaders for Coal, Coke, Stone, Sand, Etc." Illustrated, 48 pp., 6x9 in.

S K F Ball Bearing Co., 50 Church St., New York. Bulletin No. 25. "S K F Ball Bearings in Machine Tools and Shop Equipments." Illustrated, 68 pp., 6x9 in.

The International Nickel Co., New York City. "Monel Metal." Twelve pages, 4x8½ in., unillustrated, accompanied by price schedule of 6 pages, 3½x6 in., unillustrated.

The Standard Underground Cable Co., Pittsburgh, Penn. "Standard Ignition, Lighting and Starting Cables for Motor Cycles, etc." Fourteen pages, 3½x6 in., illustrated.

Chicago Pneumatic Tool Co., Fisher Building, Chicago, Ill. Bulletin No. 34-U. "Instructions for Installing and Operating Class N-SO Fuel-Oil Driven Compressors." Illustrated, 24 pp., 6x9 in.

Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill. Bulletin No. 66G. "Air-Feed Stoping Drills." Illustrated, 12 pp., 6x9 in. Blue Booklet No. 115. Air Compressors." Illustrated, 32 pp., 3x5½ in.

The Jeffrey Mfg. Co., Columbus, Ohio. Bulletin No. 165. "Wagon and Truck Loaders for Crushed Stone, Sand, Etc." Illustrated, 16 pp., 6x9 in. Bulletin No. 166. "Wagon and Truck Loaders for Bituminous and Anthracite Coal." Illustrated, 24 pp., 6x9 in.

INDUSTRIAL NEWS

Louisville, Ky.—The St. Bernard Mining Co. and the Jellico-Laurel Coal Agency have been elected to membership in the Louisville Board of Trade.

Cleveland, Ohio—The M. K. Powers Advertising Co., recently changed its name to the Powers-House Co. The present address of this firm is 724-725 Illuminating Bldg., Cleveland, Ohio.

Marshfield, Ore.—Another coal field to compete in the outside market in the near future is in the Willamette Valley of Washington. The completion of a railroad from this point will make this new field accessable.

Hazard, Ky.—Work is being pushed on the First Creek Branch of the Lexington & Eastern R.R. into a rich coal territory below here. The road will be completed within 30 days when mining activities will be started.

Ebensburg, Penn.—Mine No. 20 of the Pennsylvania Coal & Coke Corporation at Hastings, one of the oldest operations in that region, has been taken over by the Rich Hill Coal Co., whose plant is nearby. A number of needed repairs are planned and the mine will be closed down for some time, that these repairs may be properly made.

Birmingham, Ala.—A $45,000 mortgage has been given by the Eldorado Coal Co. of Birmingham to the American Trust and Savings Bank. The mortgage is to secure the issue of 45 bonds of $1000 each, payable in 1920. The Indio Coal Co. has given mortgage to the American Trust and Savings Bank for $69,000 at 6% to secure the issue of bonds to that amount.

Portsmouth, Ohio—With the settlement in the Probate Court in Scioto County of the last two condemnation proceedings, the Chesapeake & Ohio Northern Ry. Co. has an unbroken right of way from the Ohio River to the Pike County line through Scioto County. The work of constructing the roadbed for the new line through the county is being rushed.

San Francisco, Calif.—The Ingersoll-Rand Co., recently opened a branch office at 139 Townsend St., San Francisco, with a view to giving closer attention to present and prospective customers than it was possible to secure through an agency. H. L. Terwilliger is district manager for the San Francisco and Los Angeles offices, with headquarters in San Francisco.

Mobile, Ala.—In order to put the port of Mobile on an equal footing with other ports on the Atlantic coast in handling bunker coal, the Mobile Bar Pilots Association has reduced rates for vessels coming into port only for coal, to a sum equal to those prevailing on the Atlantic coast although the service rendered is considerably greater. This is the result of the opening of the Warrior River.

Columbus, Ohio—Affirming the Franklin County appellate court and reversing the Common Pleas Court, the Supreme Court remanded for new trial the suit won by the New York Coal Co. in the common pleas court for $4600 claimed to be a balance due it from the Sunday Creek Coal Co. and the Buckeye Coal & Ry. Co. on minimum royalties for coal taken from mines leased to them in 1906 to 1908.

Duluth, Minn.—Coal shipments to Duluth and Superior from Lower Lake ports, from the opening of navigation up to June 1, amounted to 1,057,589 tons, being a decrease of 449,652 tons from the amount handled during the corresponding period of 1914. Duluth's soft coal receipts in May, amounted to 251,193 tons, or just about half the tonnage received at Superior. Of anthracite, Duluth received 41,756 tons, while Superior received 208,733 tons.

Montgomery, W. Va.—The May loadings of coal and coke on the Chesapeake & Ohio R.R. amounted to 2,025,620 tons. For the same month of 1913 these loadings were 1,812,500 tons. The loadings for January and February of the current year were in excess of the loadings for the same months in 1914. March, however, showed a decrease of something over 100,000 tons, and April a decrease of 99,000 tons. The first five months of the year, however, showed an increase over the same months of 1914, of 250,000 tons.

Huntington, W. V.—The Federal Mine Rescue Department has established a sub-station in the 3rd story of the Federal Building where H. D. Jones will be permanently in charge. The establishment of the station follows the announcement made early in May to the effect that Mine Rescue Car No. 8 would have headquarters in Huntington. In cases of accident at the mines, application for use of the car will come to the Huntington sub-station. D. J. Parker will be in charge of mine rescue car No. 8 stationed here.

Philadelphia, Penn.—The Pennsylvania R.R. has been adjudged not guilty in the suit brought against it by the government before the local Federal Court, on the charge that it granted rebates of 10c. per ton to the Glen White Coal & Lumber Co., of Kittanning Point, Penn., in the Clearfield bituminous coal district. The verdict was gained largely through the statement that the payments were made for services rendered by the coal company in hauling coal from its mine to the Pennsylvania tracks, a distance of 9000 ft.

Harrisburg, Penn.—Governor Brumbaugh recently announced his approval to the Vare resolution providing for the appointment of a commission of three to investigate the cause of the increase in the price of anthracite coal by operators or dealers, whether justified or made as a result of any illegal combination or confederation upon the part of the operators of anthracite coal mines or dealers in anthracite." The commissioners are to serve without compensation and are given the right of subpoena. The commission has $5000 for expenses and may employ a secretary and call upon the Attorney-General for advice.

Toledo, Ohio—The Toledo Furnace Co. recently broke ground for a coke plant to be built on the company property adjoining the blast furnaces on the river front on the East Side. The general contract was let to the H. Koppers Co., of Pittsburgh, which already has its temporary construction office on the grounds. It is the present plan to build two batteries of coke ovens. The coke and gas manufactured will be used by the furnace company itself. West Virginia coal will be largely used according to published statements. Nearly 500 men will be employed in the construction work. This concern has in the past purchased its coke from Pennsylvania ovens.

Huntington, W. Va.—It is believel that the coal tonnage for the Grand Central Division of the Chesapeake & Ohio R.R. will, during the month of June, surpass all previous records for that month in the history of the company. Up until the 15th of the month, there had been moved 913,545 tons of coal or an increase over the same period of last year of 25,205 tons. It is estimated that over 2,000,000 tons of coal will be moved during June. During the month of May this division established a record in moving coal amounting to 2,044,675 tons. It is stated that the mining of coal has been heavy during the past month, and that the mines in this and neighboring states are operating to capacity.

Washington, D. C.—Modification of the anthracite coal rate to tidewater and the financial separation of carriers from coal companies controlled by railroads are two of the recommendations contained in the decision of the Interstate Commerce Commission, soon to be rendered. An investigation of the rates and regulations of the common carriers governing the transportation of anthracite coal from producing fields to tidewater and official territory, was instituted by the Commission on its own initiative in June 1912. The purpose of the inquiry was not only to determine the reasonableness of the rate, but whether the roads should be allowed to control mining companies. The rates on coal to tidewater are held to be too high, and a slight reduction will be enforced.

Cincinnati, Ohio—The United States District Court has heard and taken under advisement the bill of complaint brought by John S. Jones, of Chicago, seeking to compel the Hocking Valley Ry. Co. and others to turn over to him the capital stock of the Buckeye Coal & Ry. Co. and the Ohio Land & Ry. Co., which he alleges is withheld by the defendants in defiance of the decree of the court handed down in the Government's "soft coal trust" case. The point at issue is whether the stock of the two companies mentioned was to be disposed of under the decree of the court, the railway companies maintaining that it was not covered by the decree. The Government is watching the case, presumably with a view to instituting contempt proceedings if it developes that the decree of the court has been violated.

Spokane, Wash.—The third coal claim in the history of Alaska has just been allowed to go to patent, according to information received at Spokane. This claim is owned by the estate of Mary A. Rosene and was recommended for a patent by the office at Juneau. Familiarly known as the Blaine claim, it is located in the Bering River coal field and is accessable by water up the Bering River. It contains a bed of high-grade bituminous coal 17 ft. thick, running diagonally across the claim.

A striking feature of this allowance is that the Blaine claim is the only one out of 45 on the east shore of Bering Lake, a distance of 12 miles from Katalla over the mountains, to be allowed. Fourty-four claims, known as the Green-Young group and the Young-Ivey group were ruled on adversely. The Blaine claim lies adjoining the claim of M. A. Arnold of Seattle, which was allowed recently.

Coal Trade Reviews

General Review

Anthracite slow in responding to low prices and the usual summer dullness prevails. Reaction in bituminous though heavy exports stiffen up the sellers. Lake trade improves very slowly.

The anthracite trade is in the grip of the customary summer's dullness, somewhat accentuated and prematurely at hand. There are still some June orders to be shipped, but the trade failed utterly to show the usual month's end spurt, and there is little business in sight for July. Consumers are only making a feeble response to the heavy cuts offered by the individual operators, though this may be accounted for in a measure by a desire on the part of the buyers to strengthen their position with the large companies so they will be assured greater consideration in event of serious labor troubles on Apr. 1 next. The question of credits also continues a potent factor, many consumers being anxious to take supplies but only on such terms that the sellers do not feel able to meet.

There is more pressure to move bituminous coal; a reaction from the recent trend toward better conditions has developed and the price situation is not so encouraging. Quick buyers are able to pick up bargains, and low prices are the rule where any considerable block of coal is negotiated. Pressure is in evidence to move tonnage and the accumulation at Hampton Roads has reached a point where the railroads have been compelled to put temporary embargoes in effect.

The tremendous expansion in the export trade continues to exert a compelling influence on the market, and is undoubtedly stiffening the position of sellers. Additional inquiries are being received almost daily, but on the other hand a further advance in ocean freights is having a restraining influence on a further expansion in this direction. A curious development in the offshore trade is the arrival of a great many transatlantic liners on this side coaled up to their full capacity in spite of the extraordinarily high prices in Europe, and the correspondingly low prices here.

The inactivity among Ohio manufacturers, the disposition on the part of buyers to delay stocking because of the probability of continued low prices, and the fact that production can be enormously increased at any time, are depressing factors that are combining to keep the market in an extraordinarily depressed condition. Some boats are being loaded in the Lake trade, and shipments are increasing very slowly though the movement does not compare with previous seasons in any way. A congested condition is still reported at the Upper Lake docks.

Middle Western operators have apparently stiffened in their position as regards prices and are no longer anxious to contract at the prevailing low level. The coming threshing demand is a potent factor in the situation, and with generally record breaking crop reports in all sections there is a feeling of optimism in coal circles. Prices as a rule are at a fairly profitable level, though screenings are a trifle easier. The working schedules at the Southern Illinois mines are somewhat improved.

A Year Ago—Anthracite rounds out the month in better form than anticipated. Eastern bituminous markets at the lowest point for a long time. Situation at interior centers slightly improved under the influence of the large crops and the long suspension in Ohio.

BUSINESS OPINIONS

War Orders—The "Journal of Commerce" places the value of war orders, actual and expected, at $1,500,000,000 as follows: Great Britain, $500,000,000; Russia, $500,000,000; France $400,000,000, and Italy, $100,000,000. Of the total about one-third represents iron and steel products and base metals. The orders placed last week were largely for the Russian government. A feature of the contracts made recently is that they represent such items as locomotives, rails and structural material in rather larger degree than munitions of war.

Metal Markets—Shipbuilding work is active, most of the large yards on the Atlantic Coast having all the business they can take care of for the present. The activity of foreign buyers in the last fortnight has been displayed chiefly in inquiries and orders for railway equipment. Russia has ordered both locomotives and cars. France has placed an order for locomotives. Pig iron has an upward tendency and an advance was made in the price of bars and shapes to $1.25, when in reality this advance was only scheduled for July 1. The implement manufacturers have been exceedingly busy. An easing off in the price of spelter has helped the galvanizers somewhat, but many of them were practically out of the market for spelter, and they were refusing to make any quotations whatsoever for galvanized products.

Boston News Bureau—One of the peculiar features of the situation is the hesitation so noticeable in the many departments of business life. Outside of war orders there is a disposition to go slow on new commitments. The huge English and French war loans, if successful, means much. They will be a big factor not only abroad, but here. We should gain much by them in increased orders for breadstuffs and war munitions. From a money point of view this country is in a remarkably strong position. We can not only finance ourselves but can be a generous lender to Europe. Possibly conditions will change materially with the arrival of the German reply to President Wilson's second note. The outlook should be clearer after that.

Northwestern's Corp Report—Weather was cold and wet over the entire territory; crops generally are two weeks late, but the lateness may not be unfavorable. The making of the corn crop depends on the weather during July, August and September. Small grain is in excellent condition.

Bradstreet—A mixed budget of news is in evidence this week. Weather irregularities over a wide area have restricted current distribution of seasonable goods, while excessive moisture in the surplus grain producing states has retarded harvesting or crop growth, and pending the outcome of international political matters, some interests prefer to work along conservative lines. On the other hand, industrial operations continue to expand.

Marshall Field & Co.—Wholesale and retail distribution of dry goods shows unseasonable volume owing to the continued cool weather. Sales for future delivery by our traveling representatives are slightly ahead of those of the corresponding week a year ago. Fewer retailers have visited the market than during the same period last year. Collections are fair.

Duns—Nothing has occurred to check progress or to dim the bright future outlook. Prominence given to Europe's purchases of war materials overshadows the trend of affairs in strictly domestic channels, but there is still a gradual expansion in home consumption, and evidence of a less cautious policy in anticipating forward requirements. Recent official promise of abundant grain harvests has done much to stimulate confidence anew, and reports from the leading centers reflect an increasingly optimistic sentiment and more uniformity as regards actual business improvement.

ATLANTIC SEABOARD

BOSTON

Market quiet again and prices recede. Virtual embargo against some of the West Virginia output. Pennsylvania grades compete closely for business. Water freights quiet. Dull outlook for July anthracite.

Bituminous—The market on Pocahontas and New River is again extremely quiet. Although until recently the trend was encouraging it is now realized that the price situation is none too good. When any considerable block of coal is placed there are rumors of low prices and such sales as are reported undoubtedly reflect others that are on a like basis. The fact is the West Virginia operators are, as usual, showing their inability to work harmoniously and the output is too great for the market to absorb.

The demand for shipments inland is only spasmodic. Stocks are generally up to maximum and most buyers wait for

price inducements. Cargoes for these points move very hard, and all-rail trade is also dull.

The railroads running to Hampton Roads appear to be taking a hand in the situation, to the extent of declaring what amounts to an embargo against shippers who fail to release cars in reasonably good time. This drastic remedy is made necessary by the big accumulations at the piers.

Georges Creek coals are not in any more plentiful supply. The slow movement of barges the past fortnight has simply helped out the detention at Baltimore; had they moved better they would have had longer waits at the loading piers.

Water Freights are again as quiet as the coal market. The demand falls off, and the slow movement of boats is not so much noticed. The Reading barge rate on bituminous from Philadelphia continues at 80c. to Boston points, notwithstanding a general expectation it would be reduced 5@10c. by the middle of June. Desirable transportation for the shoaler points is still in fair request.

Anthracite—The hard-coal market is almost featureless. There are still some unshipped orders for June, but for July there is little in sight. The July 4 suspension will be in effect soon, however, and with mining so close-hauled there is small likelihood of weak prices—at least not on the part of the principal companies. Meanwhile New England retailers are putting out very little coal.

Current quotations on bituminous at wholesale are about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*	$0.85@1.40	$1.20@1.60	$1.67@1.77	
Philadelphia*	2.10@2.65	2.45@2.85	2.92@3.02	
New York*	2.40@2.95	2.75@3.15	3.22@3.32	
Baltimore*	.....	.....	2.85@2.95	
Hampton Roads*	.....	.....	.....	$2.65@2.80
Boston†	.....	.....	.....	3.60@3.78
Providence†	.....	.....	.....	3.50@3.73

* F.o.b. †On cars.

PHILADELPHIA

Anthracite continues dull, with collieries on half time and prices off circular. Bituminous very quiet, but some operators feel a change for the better is soon due, especially on Tide shipments.

Anthracite—Low prices and a dull market have been the ruling conditions the past week. Very few orders are coming in, as most of the dealers have filled all their winter storage orders. They state their customers offer plenty of orders but don't want to pay until fall. The summer dullness is evidently more apparent with the retail men than usual, as two quite prominent dealers have laid off men, a thing which they have not done in years past.

Cheap coal continues the rule. One dealer informed a representative of one of the large producing companies that he positively was not in the market for any first class coal; the only orders he had to fill were those for institutions and that he intended to go into the open market for bargains to take care of that trade. This seems to be the general practice among a number of dealers on orders of this nature, quality being only a secondary consideration on account of the low price at which they are taken.

Pea coal continues subject to the heaviest cutting. The circular is hardly thought of. One of the large companies is offering blocks of a thousand tons of this size at $1.85, without tax, freight prepaid. Most dealers claim they can buy good pea in any quantity at $1.60. Others yet say they have bought at $1.50, although it is not likely that any considerable quantity is moving at this latter price—yet.

Stove continues to hold closer to the circular than any of the other sizes; but there is not the least doubt that even this grade can be bought at the April circular, the usual conditions being, however, in this event that the other sizes must go with it to get the April price.

The retail price war in West Philadelphia and Kensington districts continues, although little coal is moving, as the class of trade in these sections usually buys only as needed.

The circular prices are as follows:

	City	Tide		City	Tide
Broken	$3.20	$4.45	Pea	$2.50	$3.25
Egg	3.45	4.70	Buckwheat	1.25	2.25
Stove	3.70	4.70	Rice	0.85	1.75
Chestnut	3.85	4.95	Barley	0.50	1.50

Bituminous—The situation is not materially different from last week, although among quite a number of interests the opinion is that a change for the better is due shortly, particularly as the iron and steel business continues to show increased activity. There are also fairly good inquiries for foreign deliveries, due to a stiffening by the British Government of the restrictions against coal exports, and this probably accounts for the fact that the exports the past week showed a slight increase over the preceding period.

Prices rule about as follows:

Georges Creek Big Vein	$1.65@1.75	Fairmont gas lump, mine run	$1.15@1.25
South Fork Miller Vein	1.50@1.60	Fairmont gas, slack	0.65@0.75
Clearfield (ordinary)	1.00@1.20	Fairmont lump, ordinary	0.85@0.95
Somerset (ordinary)	1.00@1.15	Fairmont run of mine	0.75@0.80
West Va. Freeport	0.85@0.95	Fairmont slack	0.45@0.75

Ocean charters from Philadelphia have been announced as follows:

Vessel	Nationality	To	Tons	Terms
Frankby	British	Barcelona	2618	
Hamborn	Dutch	Sagua	742	
Edwin R. Hunt		Porto Rico	1005	
Bertha L. Downes		Porto Rico	606	
Walter D. Noyes		New England		
Esrom	Danish	Havana	2040	
Hackness	British	Buenos Aires	2954	
Kariba	British	Buenos Aires	2350	
George Pyman	British	Barcelona	2350	
Rosebank	British	Valencia	2470	
Diana	Norwegian	Cartagena, Col.	691	
Jata Mendi	Spanish	Barcelona	2746	$9.60
Llanover	British	Argentine	6500	
Tavian	British	So. America	2878	
Island	Danish	Havana	2040	
Eagle Wings		Charleston	1900	1.10
William Booth		Portsmouth	825	0.90
E. A. Allen		Summerside, P.E.I.	775	2.10
Orkila	Danish	Havana	1622	

Note—Steamers are indicated by **bold face** type.

The "Philadelphia News Bureau" reports that the collieries of the Reading and the Susquehanna coal companies operated three days last week.

OCEAN FREIGHTS

Steamers anxious for charters to Spanish ports. Substantial advance in rates to the Plate.

During the last week a number of steamers were chartered from Atlantic Range to picked ports on the west coast of Italy at $10.08. lay days to commence on vessel's arrival at or off port with 24c. per net register ton per day demurrage, and it may be possible to shade this rate slightly. As previously advised, steamers are particularly anxious to secure coal to Spanish ports, and will accept reasonable rates.

Plate rates have advanced very materially and $8.40 is now offered for steamers to take coal to Lower Plate ports. Grain freights from the Plate have declined considerably and the general impression is that the movement of this year's Plate grain has been about provided for.

The freight market is quotable as follows:

To	Rate	To	Rate
Havana	$2.00@2.25	Bermuda	$3.50@3.75
Cardenas or Sagua	**2.75**	Vera Cruz	3.50@3.75
Cienfuegos	2.75@3.00	Tampico	3.50@3.75
Port au Spain, Trinidad	3.50@3.75	Rio	**8.64**
St. Lucia	**3.50**	Santos*	**8.88**
St. Thomas	3.00@3.25	Montevideo	8.40@8.52
Barbados	3.50@3.75	Buenos Aires or La Plata	8.40@8.64
Kingston	2.75@3.00	Rosario	**9.12**
Curacao	**3.50**	West Coast of Italy	9.80@10.08
Santiago	2.50@3.00	Barcelona**	**9.00**
Guantanamo	2.50@3.00	Valparaiso or Callao	6.75@7.00
Demerara	5.00@5.85	Marseilles	**9.24**

Note—Rates noted in **bold face** type are only approximate.
* Consignees paying dockage dues. **Spanish dues for account.
W. W. Battie & Co.'s Coal Trade Freight Report.

NEW YORK

Bituminous stocks at Tide increasing and quick buyers can get cheap coal. Heavy export demand. Anthracite experiencing the full force of the midsummer dullness.

Bituminous—A slight improvement in demand, but not in prices, is noticeable. Large consumers are replenishing their bins and sales agents report better prospects. This together with a heavier call for export and bunker coal are the features of the soft-coal situation.

However, the general situation, as regards the New York market is quiet. Production in the Central Pennsylvania fields continues on about a half-time basis. Shipments to the Atlantic Seaboard are being continued as for the past several weeks while the accumulation at the local docks is increasing and quick buyers are able to pick up some good bargains in spot coals. Demurrage coal is not much in evidence and better reports are received from the line trade. Most shippers are depending largely on the Lake and Western business; increased demand is reported from these sources. Prices are weak. The call from New England has shown no signs of improvement.

Several big contracts were reported as being closed last week but the prices were not made public.

This month promises to be a record breaker in export demand. Additional inquiries are being received almost daily and there have been some inquiries with regard to gas coal for export. Companies with New York offices report an increased demand. Freight rates remain stiff. Some good sized cargoes have been sent to Spain and France and Italy is reported as having made several large purchases.

Current quotations continue as follows:

	South Amboy	Port Reading	St. George	Mine Price
Georges Creek Big Vein	$3.30@3.40	$3.30@3.40	$3.30@3.40	$1.75@1.85
Georges Creek Tyson	3.00@3.10	3.00@3.10	3.00@3.10	1.45@1.55
Clearfield:				
Medium	2.65@2.80	2.55@2.65	.....	1.10@1.25
Ordinary	2.55@2.60	2.55@2.60	.....	1.00@1.10
Broad Top Mountain				1.10@1.45
Cambria County:				
South Forks	2.90@3.05	.....	.....	1.35@1.50
Nanty Glo	2.75@2.80	.....	.....	1.20@1.25
Barnesboro	2.65@2.70	.....	.....	1.10@1.15
Somerset County:				
Quemahoning	.....	2.70@2.85	2.70@2.85	1.20@1.30
Medium	2.65@2.70	2.60@2.65	2.60@2.65	1.10@1.15
Latrobe	2.45@2.55	.....	.....	0.90@1.00
Greensburg	2.75@2.80	.....	.....	1.10@1.15
Westmoreland	2.95@3.20	.....	.....	1.15@1.40
West Virginia Fairmont [1]		2.60@2.70	2.60@2.70	0.80@0.90
Fairmont mine-run		2.50@2.60	2.50@2.60	0.70@0.80
Steam		2.45@2.50	2.45@2.50	0.90@0.95
Western Maryland		2.35@2.45	2.35@2.45	0.80@0.90

Anthracite—The call for anthracite coal shows no improvement, although this is the last week when dealers will be able to take advantage of the June discount. The midsummer "drag" is on and with the vacation season at hand, coalmen are practically taking a rest. Only those dealers who secured large contracts are able to work their entire force.

Some companies are working on a four-day basis while others are doing better. Individuals who thought that by cutting prices they would be able to move their stocks easily are beginning, apparently to realize the opposite. One reason abvanced for this is that the retailers expect trouble in the coal fields next spring and are holding closer to the companies expecting that with a suspension of mining or a shortage of coal this winter their wants will be better looked after by the companies than by the individuals.

All prepared sizes are in plentiful supply. Nut coal is the longest; there is very little call for it at Tidewater and some companies are storing it Egg and stove are easier to move.

Current quotations are as follows:

	Lower Ports		Upper Ports	
	Circular	Individual	Circular	Individual
Broken	$4.75		$4.80	
Egg	5.00	$4.80	5.05	$4.85
Stove	5.00	4.80	5.05	4.85
Chestnut	5.25	5.00	5.30	5.05
Pea	3.35@3.50	3.10@3.35	3.40@3.55	3.15@3.40
Buckwheat	2.50@2.75	2.25@2.50	2.55@2.80	2.30@2.55
Rice	2.00@2.25	1.90@2.10	2.05@2.30	1.95@2.25
Barley	1.75@2.00	1.60@1.75	1.80@2.05	1.85@2.10

OCEAN CHARTERS

Coal charters have been reported by the "Journal of Commerce" as follows:

Vessel	Nationality	From	To	Tons	Rate
Apolo	Spanish	Atlantic Range	River Plate	2800	
Blancae	Norwegian	Norfolk	Pernambuco	1477	$7.00
Edward J. Lawrence		Norfolk	Boston	2483	
Prosper III	Norwegian	Baltimore[2]	River Plate	2689	7.68
Westgate	British	Baltimore	Campana	1787	8.52
					8.64
Francesco Ciampa	Italian	Atlantic Range	Italy[3]	2338	10.08
Laura C. Anderson		Norfolk	Morocco	766	7.40
Brina P. Pendleton		Norfolk	Lisbon	321	
A. & M. Carlisle		Philadelphia	St. John, N. B.	302	1.75
Mongibello	Italian	Atlantic Range	Italy[3]	2553	10.08
Sicania	Italian	Atlantic Range	Italy[3]	2750	
Tsirapinas	Greek	Atlantic Range	Italy[3]	1925	
Sowwell	British	Baltimore[2]	Italy[3]	2430	10.56
Orkild	Danish	Philadelphia	Havana	1622	
Samuel H. Hathaway		Newport News	Porto Rico	906	
Llanover	British	Philadelphia	River Plate	3040	
Antinous	British	Baltimore	River Plate	2362	
Liegeiose	Belgian	Baltimore	River Plate	2504	
Sabastino	Italian	Baltimore	Italy[3]	2567	
Rosalba	Italian	Baltimore	Italy[3]	1137	
Augustus H. Babcock		Virginia	Rio Janeiro	1299	
F. A. Allen		Philadelphia	Summerside	462	$2.10
William Booth		Philadelphia	Portsmouth	435	0.90
Highbury	British	Atlantic Range	Puget Sound	3026	6.00
	American	Atlantic Range	Tiburon	2000-3000	6.35
Chorley	British	Atlantic Range	Bahia Blanca	2468	8.88
Tavian	British	Virginia	Rio Janeiro	2878	8.64
Mersaro	British	Baltimore	Montevideo	2443	
Harflete	British	Baltimore	Sicily	3021	
Teviotdale	British	Baltimore	Italy[3]	2538	
Gowanburn	British	Virginia	Rio Janeiro	2723	8.34
Iperia	British	Baltimore	Montevideo	2061	
Ithaki	Italian	Baltimore	Italy[3]	2419	10.80
Antonios Stathatos	Greek	Baltimore	Italy[3]	1749	10.56
Luigi	Italian	Baltimore	Italy[3]	2260	
Scheria	Italian	Baltimore	Italy[3]	1724	
Hackness	British	Philadelphia	Buenos Ayres	2954	
Geo Pyman	British	Philadelphia	Barcelona	2508	
Rosebank	British	Philadelphia	Valencia	2470	
Silverstream[1]	Italian	Baltimore	Sicily	1151	
Antonia d'Ali[1]	Italian	Baltimore	Sicily	596	
Jacksonville		Hampton Roads	Jacksonville	547	1.10

Note—Steamers are indicated by **bold face type,** all others being schooners.
[1] Bark. [2] Or Virginia [3]. West Coast.

HAMPTON ROADS

Shipments only fair. Heavy exports to Italy continue. Large tonnage being taken for bunkering.

Shipments of coal from tidewater have been fair although hardly as large as anticipated. During the week there have been days when some of the piers did but little dumping while at those where the major portion of the export coal was loaded there was heavy vessel tonnage in dock the entire week. The coastwise movement has gone to practically all of the New England ports with two large cargoes to the Pacific Coast for the U. S. Government.

While Pocahontas and New River run-of-mine have been the principal coals moving there has been some small amount of prepared gas coal shipped and some coke to Peru.

Although there has been no large number of bunker steamers calling a fair quantity of coal for this purpose has been shipped as nearly all vessels are taking above their normal requirements to save taking coal aboard in Europe.

The following vessels have cleared from Hampton Roads during the past two weeks:

Norfolk			Norfolk		
Vessel	Destination	Tons	Vessel	Destination	Tons
Anna[5]	Barbadoes	2500	**Geo. M. Embiricos**	Piraeus	5618
Washington	Messina	6900	Edith H. Symington	Seville	1359
Sjostad[2]	Santiago	1525	Newport News		
Tabor[1]	Curacao	5500	**Stephen**	Para	3875
Catalone	Annunziata	5385	**Lucy Neff**	Guantanamo	1050
Genova[3]	Catania	5500	**Comino**	Callao via Norfolk	2593
Georgios	Civita Vecchia	5172	**Mayaro**		1450
Wm. E. Burnham	St. Georges	1125	**Tavian**		6800
Venetia[4]	Dakar	4852			
Woodard Abrahams	Casa Blanca	963			
Comino	Callao	*1176			
Banda	Amsterdam	4500			
Enrichetta	Elba	5100			
Lejre	Palermo	3800			
Adriatico	Naples	5502			

Shippers [1] Castner, Curran & Bullitt. [2] Baker-Whiteley Coal Co. [3] Pocahontas Fuel Co. [4] West Virginia Coal Co. [5] Smokeless Fuel Co. [6] Berwind-White Coal Mining Co. *Coke.

Shipments to other foreign ports have been reported as follows:

Ports	Tons	Ports	Tons
Havana	15,561	Rio de Janeiro	26,857
Marseilles	15,142	Canal Zone	28,708
Genoa	47,005	Buenos Aires	7,695
Pernambuco	2,680	Lisbon	3,253
Montevideo	11,964	Elba	9,676
Cagliari	15,700	Port au Spain	5,700
Tarragona	9,085		

Railroad Tonnages—Dumpings over the local piers for the past several weeks compare as follows:

	Week Ending				
Railroad	May 22	May 29	June 5	June 12	June 19
Norfolk & Western	162,921	146,462	156,011	197,533	207,824
Chesapeake & Ohio	84,286	83,678	44,702	89,447	71,511
Virginian	39,431	61,688	38,372	34,975	51,644
	286,638	291,828	239,085	321,955	330,979

BALTIMORE

Export trade continues the leading feature. Domestic situation weak.

Interest centers on the export trade. In April it ran to 193,000 tons, the port record by more than 65,000 tons in any month; in May it reached 131,000 tons, while the first half of June saw such a heavy tonnage moved that the prospects for a total of from 250,000 to 300,000 tons do not seem exaggerated.

The domestic market, however, is very far from satisfactory. At the mines coal is still offering very cheap. Low-grade West Virginia coals are still offering at 75 to 85c. in many cases and ordinary Pennsylvania line fuels are to be had at 90 to 95 cents.

Charters for vessel loadings at Baltimore were announced as follows:

Vessel	Nationality	Tons	Destination	Rate
Mersario	British	2443	Montevideo	
Harflete	British	3021	Maddalena, Sicily	
Achlibster	British	2820	Barcelona	
Teviotdale	British	2528	West Coast Italy	
Luigi	Italian	2260	Civita Vecchia	
Scheria	Italian	1724	Palermo	
Silverstream[1]	Italian	1151	Sicily	
Antonio d'Ali[1]	Italian	596	Palermo	
North Pacific	British	2493	West Coast Italy	$10.80
Catalone	British	2410	West Coast Italy	10.80
Masarua	British	3189	Rio Janeiro	8.76
Christoforas	Creek	2345	West Coast Italy	10.80
Rosalba	Italian	1137	West Coast Italy	
Sebastino	Italian	2567	Genoa	9.60
Pacific	British	4612	River Plate	9.60
Antinous	British	2362	River Plate	9.60
Liegeirse	Belgian	2504	River Plate	9.60
Balgray	British	2318	Piraeus	10.80
Antonios	Greek	1749	West Coast Italy	10.56
Ithaki	Greek	2419	West Coast Italy	10.80

[1] Bark.

During the week ending June 19 the export shipments from Baltimore totaled 89,929 tons.

LAKE MARKETS

PITTSBURGH

Slight signs of betterment, but operations remain at about 60% capacity and prices are low and unchanged. More export demand experienced by Connellsville operators.

Signs of betterment are beginning to appear in the Pittsburgh district. Demand from manufacturers has increased somewhat but as this is almost wholly against contracts, and the smaller operators that do not have large contracts are chiefly responsible for market prices, it does not help the market materially. The excellent crop prospects have revived hopes that the Lake movement will show considerable increases later. Export demand is becoming more a factor, particularly with Connellsville coke interests, who have a low mining scale and a very good grade of coal. The actual cost per net ton on cars is not over 40c. or 50c., and at going prices there is more money in shipping export coal than in turning it into coke. Mine operations in the Pittsburgh district proper remain at about 60% of capacity.

There is hardly any contract market, though $1.15 is the usual asking figure for mine-run to Apr. 1. Free coal ranges about as follows: Slack, 55@60c.; nut and slack, 90@95c.; nut, 95c.@$1; mine-run, $1@1.05; ¾-in., $1.10@1.15; 1¼-in., $1.20@1.25, per net ton at mine, Pittsburgh district.

BUFFALO

Slight improvement in bituminous, warranted by prospects of a stir in iron. Anthracite not selling as it should though this may cause a bigger rush than ever next winter. All mines running slow.

Bituminous—The trade shows some disposition to improve. There are not so many members who complain of no change which means a better business. Some of the iron districts are more active and are taking off the miners. Indications now are that there will be both car shortage and shortage of men as soon as the demand for fuel is good again.

The Lake trade is doing a little better. One shipper, who diverts his coal this way when the Lakes demand drops off, has sold all he cares to here and is now concentrating on the Lake trade. Others look to the large and growing export coal trade and if the home demand increases the circle will be complete, even though the improvement is not large. There is not much business from Canada and sales to that trade show no improvement. If the war should suddenly stop there might be an early return to business.

Bituminous prices remain on the former basis of $2.70 for best Pittsburgh lump, $2.55 for three-quarter, $2.45 for mine-run and $2.25 for slack, with Allegheny Valley sizes 25c. less.

Anthracite—There is no stir in the anthracite trade. The demand is very light. The mid-summer lull has come in mid-spring this year and it is not likely to change till there is cool weather to remind the consumers of winter. Some of the retailers are buying moderately, to get their supply at bottom prices, but they are not selling as fast as they are buying. Coal will slowly accumulate with them till the fall trade sets in.

The anthracite mines are running much slower than they commonly do at this time of the year. The amount shipped by Lake from this port for the week was 145,000 tons, a large showing for the time of the year and the state of the trade.

TORONTO

Demand continues light and supplies plentiful.

The demand in all lines continues light with no immediate prospects of any improvement. Dealers are stocked up for several months ahead and well provided against any scarcity which might result from labor troubles. Quotations for best grades are unchanged as follows: Retail anthracite, egg, stove and nut, $7.50; grate, $7.25; pea, $6. Bituminous, steam, $5.25; screenings, $4.25 to $4.50; domestic lump, $6; cannel, $6. Wholesale f.o.b. cars, $3.56; screenings, $2.90.

COLUMBUS

Steam business quiet though some better buying is reported in domestic circles. Lake trade increasing. Small sizes the only grades in demand.

The trade has been rather quiet during the past week. There is no increased buying of steam grades and that department remains dull. Some increase in the stocking movement is reported and a larger tonnage has been moving to the bins of the retailers. On the whole the tone of the market is not very good, although some operators profess to have a hopeful view of the future.

Buying for stocking purposes is increasing in every locality. This is especially true of the better grades such as Pocahontas and West Virginia splints. Some of the jobbers are selling quite a little Hocking lump for that purpose. The stocking movement is expected to be more marked after the coming convention of the Michigan-Ohio, Indiana Coal Association at Cedar Point, Ohio.

Lake business is increasing since the eastern Ohio field has resumed operations. Reports from the Northwest show that the docks are still very much congested and that interior buying is limited.

One of the best features of the trade is the strong market for the small sizes. Nut, pea and slack both from Ohio and West Virginia is in good demand as the production is rather limited. The same is true of coarse slack.

Prices in the Ohio fields are:

	Hocking Valley	Pomeroy	Kanawha
Rescreened lump	$1.45	$1.50	.....
Inch and a quarter	1.35	1.35	$1.30
Three-quarter inch	1.25	1.30	1.25
Nut	1.15	1.25	1.15
Mine-run	1.05	1.10	1.05
Nut, pea and slack	0.70	0.75	0.65
Coarse slack	0.60	0.70	0.55

Mines have been working at about the following percentage of full capacity:

District	Week Ended May 29	June 5	June 12	June 19	District	Week Ended May 29	June 5	June 12	June 19
Hocking	30	30	25	25	Cambridge	35	35	35	30
Jackson	20	20	20	15	Masillon	35	35	40	35
Pomeroy	45	50	50	50	Eastern O.	15	25	30	45
Crooksville	35	35	30	30	Average	26	33	33	33

TOLEDO

Smokeless demand fairly good with small supplies at Toledo. Lake trade continues light. Indications that railroads may soon contract.

Some boats are being loaded in the Lake trade and quite a lot of coal is being shipped to the local docks but there is nothing that resembles a real market as compared with other seasons. It is probable that the movement will be heavier later on but this continues uncertain. This same condiiton prevails at Sandusky.

Smokeless coal is in fair demand and the prepared sizes are short. The production of the Hocking, Pomeroy and Cambridge districts is light and there will probably be very little improvement until the threshing season opens. West Virginia production is not specially heavy and will probably not be much improved until the Lake movement is larger. The Pittsburgh No. 8 district will have a better movement when the railroads begin placing orders; occasional inquiries are being received which would indicate that a number of the roads may soon place contracts. Prices are not being very closely maintained here save in a few lines.

CINCINNATI

General sluggishness prevails in all departments of the market. Industrial inactivity is apparently the principal cause.

The market still fails to show anything like the usual activity of the early summer. The several factors responsible for this remain unchanged, making it apparent that no relief can be looked for soon. The relative inactivity in manufacturing the tendency of the retailers to hold off stocking and the fact that production can be pushed to a high figure at any time, have combined to keep the market extraordinarily weak and dull. All varieties of rail and river coal are in plentiful supply on this market.

LOUISVILLE

Preparations for threshing is causing some activity but the market continues quiet.

Nothing has occurred in the Kentucky field during the past week or ten days to give the market any better tone, except that threshing will soon begin and there is some preparation for that. Some of the flouring mills of the state are making preparations to run when the new wheat comes on the market and are laying in coal.

Contracts are proving hard to make at this time, the industrial concerns preferring to take their chances on the open market. The Northern markets are not absorbing sufficient coal to relieve the pressure as usual. Cold weather has hurt the trade some due to its effect on the crops. Prices range in neighborhood of the following: Block, $1.50; round nut, $1.20; steam run-of-mines, $1. These are top prices, the regular June schedule, and there is not much shading or cutting, it is stated, because there is no market to buy even at low prices.

CLEVELAND

The local market is still lower and the downward tendency has not been checked. Pocahontas alone shows strength.

Slack prices are from 5 to 7c. lower than a week ago. Offerings of coal are made at almost any price to obtain an order. Pittsburgh fine coal sold Monday at $1.45 and Ohio No.

8 at the same price; these are nominal figures and 2c. less was accepted by some. The supply received here is not in excess of needs, but the offerings of operators were so heavy prices could not be maintained.

Coarse coals are barely holding their own at last week's quotations. The Lake trade is not taking enough coal to hold the market firm; Lake shipments are off 40% with no improvement in sight. May shipments from Duluth-Superior docks were smaller than in April and 2000 cars less than May of the last two years. Other ports report business on the same basis.

Pocahontas is up a little and egg and lump sizes are held fairly firm at quotation. Mine-run is about the same, but not as high proportionately.

Quotations for shipment to jobbers are as follows:

	Pocahontas	Youghiogheny	Bergholz	Fairmont	Ohio No. 8
Lump	$3.45	.....	.....	.....	.....
Lump, ¾ in.	.....	$2.15	$1.95	$1.85@1.90	$1.8 @1.90
Egg	3.45	.....	.....	.....	.....
Mine run	2.65	2.05@2.10	1.80	1.80	1.75@1.85
Slack	.....	1.45	1.45	1.45	1.45

COKE

CONNELLSVILLE

Coke market disappointing through not reflecting improvement in steel. Occasional sales at lower than current quotations.. Production and shipments make fresh high record for the year.

Coke operators are disappointed that the market does not show more life, when conditions in the steel trade are improving so steadily. The inquiry that recently appeared for second-half is largely hanging fire, partly perhaps because operators are trying to obtain $1.75 minimum with a sliding scale instead of $1.75 flat. A contract recently made, but which is just now heard of by the trade, involved about 7000 tons a month over the second-half, for Wheeling, at a price said to be under $1.70. A sale over the next two months has just been made at $1.50, and both these transactions are at lower figures than were supposed to represent the market.

Production and shipments of Connellsville coke have increased 65% since December without any real stiffening in prices and a labor shortage is threatened if much further increase in operations is required. The Frick Co. has blown in several hundred ovens in the past fortnight, when it could have increased its output by putting some of its operating plants on a six-day schedule, because it wished to get and hold the men against future requirements.

We quote furnace coke at $1.50@1.60 for spot and nearby shipment and $1.75 for second-half, and foundry coke at $2@2.40 for prompt and $2.20@2.50 for contract, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended June 12 at 334,514 tons, an increase of 19,617 tons, and shipments at 332,595 tons, an increase of 11,454 tons, both being new high records for the year.

Buffalo—There is report of improvement and even of better prices, but it is too early to say that it is a fact. Some stir in the iron trade is also regarded as a certainty, either now or to take place right away. One condition that is against an advance in either coke or iron is that there is no corresponding increase of activity in bituminous coal, which is waiting for a stir of that sort. Quotations remain on the basis of $4.25 for best 72-hr. Connellsville foundry and $3.25 for stock coke.

Chicago—The coke market is stronger. The tendency of prices for gas house coke is higher, and sales have increased. Domestic sizes also show betterment, but no change has occurred in the demand for foundry grades. Prices are as follows: Byproduct, $4.65@4.85; Connellsville, $4.85@5; Wise County, $4.75; gas coke, $3.75@4.90; furnace, $4.75.

MIDDLE WESTERN

GENERAL REVIEW

Market generally stationary with more activity in domestic sizes. Screenings easier. Smokeless coal still gaining strength. Anthracite demand improved.

Surface conditions remain unchanged from a week ago, though the same feeling of optimism still prevails. Operators are not so eager to contract their output at low prices, and in several instances advances have been announced to take effect on July 1. It is true not a large volume of business is moving, but undoubtedly the sentiment has changed.

Storage buying, which is from two to three months late, has now begun, and although not of great consequence as yet is bound to have a healthy effect in July. Some buying is noted on the part of country dealers to replenish stocks. The Northwest seems to be taking heavier tonnages than any other section at the present time. It is expected that higher prices will prevail for Indiana and Illinois coals next month, owing to the small tonnage thus far stocked and increasing inquiries received for quotations covering deliveries in the immediate future.

CHICAGO

Improved running time at southern Illinois mines. Prices to advance on July 1. Situation in Indiana grades less favorable.

It is understood that the southern Illinois operators have had improved running time, some of the mines making six days last week; they are shipping more domestic sizes, particularly to the Northwest and very little is moving at less than $1.35, while it is announced that $1.50 will be the list price on July 1. It is also understood that No. 1 nut will be held for $1.50, and No. 2 at $1.35 on the first of next month. The demand for steam sizes is only fair and screenings are a trifle easier, but are holding at about 85c.

The movement of lump coal from Sullivan County is very slow, but in spite of this, screenings have declined on an average of 10c. per ton although it is thought that this is only temporary, and prices will shortly be on a higher level. Steam buying is slowing up and shippers are having difficulty in renewing contracts. The demand for coarse steam sizes has fallen off, and price cutting is noted. Some Indiana coal has been sacrificed in the Chicago market during the past week at a concession of 5c. to 10c. per ton, and the Indiana outlook seems to be generally less promising than in Illinois. Very little domestic sizes are moving from Sullivan County.

The market for Clinton and Knox County coals is dull, the demand for all sizes being quiet, but prices are well maintained.

Spot sales of Pennsylvania smokeless lump and egg have been made as low as 30c. per ton under list and plenty of mine-run has been sold at $1 per ton but operators expect higher priced orders next month.

A considerable tonnage of eastern Kentucky coal has been forwarded on consignment, and prices are still variable.

The demand for all-rail Hocking is light, but the operators continue to keep free coal off the market.

There is increased buying in anthracite, and further West it is reported that concessions have been made in order to market chestnut.

Quotations in the Chicago market are as follows:

	Williamson and Franklin Co.	Springfield	Sullivan	Clinton	Knox and Greene Cos.
Lump	$1.35	$1.35	$1.35@1.40	$1.25@1.30	$1.40
Steam lump	....	1.25	1.10@1.15	1.15@1.20	1.30
2½-in. lump	....	....	1.25@1.30	1.15@1.25	1.30
1½-in. lump	....	....	1.20@1.25	1.15@1.20	....
Egg	1.25@1.35	1.25@1.35	1.15@1.25	1.15@1.25	1.15@1.25
Nut	....	1.15@1.25	1.00@1.05	1.00@1.05	1.00
No. 1 washed	1.25@1.35	....	1.50	....	....
No. 2 washed	1.25@1.35	....	1.40	....	....
No. 1 nut	1.25@1.35	....	....	....	....
No. 2 nut	1.25@1.35	....	....	....	....
Mine-run	1.10	1.05@1.10	.85@1.10	.90@1.00	.85@1.05
Screenings	.85@ .95	.80@ .85	.75@ .80	.70@ .80	.75@ .80

	Harrisburg & Saline Co.	E. Kentucky	Pocah. & W.Va.Smok'l.	Penna. Smokeless	Hocking
Lump	$1.25@1.35	$1.30@1.70	$1.90	$1.35@1.50	$1.25@1.50
1½-in. lump	1.20@1.30	....	....	....	....
Egg	1.10@1.25	1.25@1.60	1.75@1.90	1.25@1.40	1.25@1.40
Nut	....	1.15@1.35	1.40	1.15@1.35	1.15@1.25
No. 1 nut	1.25@1.35	....	....	....	....
No. 2 nut	1.25@1.35	....	....	....	....
Mine-run	1.05@1.10	....	1.10@1.25	1.05@1.10	....
Screenings	.85@ .90	.65@ .80	....	....	....

ST. LOUIS

Beginning of the threshing season has a stimulating effect on the market. Prices a trifle stiffer.

The opening of the threshing season in the South and preparations for its opening in the West, North and Northwest is putting more life into the market than it has manifested this spring. The threshing outfits do not use a great quantity of coal but it is enough to stimulate the market to a perceptible extent.

The increased demand has stiffened prices a little. Treshing will not be on in the North for a couple of weeks but orders have already been placed. The result has been an advance of upwards of 10c. on the lump and egg sizes that the threshers use. Screenings are a little stronger than last week. Some natural improvement is expected around the

first of July and there are indications that such improvement is about to set in.

	Wilm. & Frnk. Co.	Sparta	Mt. Olive	Standard
6-in. lump	$1.25@1.35	$1.25	$1.25	$0.90
2-in. lump	.....	0.90	1.25	0.80
3-in. lump	.....	....	1.15	....
3x6 egg	1.25@1.35	....	....	0.80
No. 1 nut	1.25@1.35	....	....	....
No. 2 nut	1.15@1.25	....	....	0.80
No. 1 washed	1.25@1.35	....	1.35	....
No. 2 washed	1.15@1.25	....	....	....
No. 3 washed	1.20	....	....	..
No. 4 washed	1.15	....	....	....
No. 5 washed	0.80	....	....	....
Screenings	0.80@0.85	0.90	....	0.80

INDIANAPOLIS

Screenings the only grade in demand. Not much improvement anticipated until the crop movement starts.

Mine operations continue at about the minimum, as usual in summer. There is plenty of coal on the open market, except screenings, which are in rather short supply and for which the demand is relatively good. However, contracts for screenings are difficult to make, owing to the experiences of last year, when buyers in the open market could get them almost at their own price; whether they will have this luck again is purely speculative.

The trade runs along at about the same level week by week and no change is expected until grain begins to move. Usually about that time cars become scarce, but operators do not anticipate much of a shortage the coming fall. The industrial demand does not seem to improve noticeably, nor does it fall back. Mine-run sells at $1 to $1.20 and screenings at 80c. to 90c. Indiana has promise of good crops of wheat and oats, particularly the latter, which will break the state record.

KANSAS CITY

The retail coal market in Kansas City has shown no signs of life for the week. The demand and the prices have both remained at the very lowest. The wholesale market seems to have settled into a routine of an even demand and supply. Prices remain unchanged and business confined almost entirely to the steam grades.

PRODUCTION AND TRANSPORTATION STATISTICS

BITUMINOUS COAL MOVEMENT

The following is a summary of the movement of coal and coke over 13 principal railroads during April and the first four months of the last two years, in short tons:

	April		4 Months	
Anthracite	1914	1915	1914	1915
Baltimore & Ohio[1]	129,220	125,682	536,762	433,130
Chesapeake & Ohio[1]	1,903	1,451	4,954	3,623
Erie[2]	726,237	826,053	2,854,845	2,736,929
Pennsylvania[1 3]	1,070,562	1,126,690	3,776,953	3,607,419
Virginian[3 1]		112	52	197
Total 5 roads	1,927,922	2,079,988	7,173,566	6,781,298
Bituminous				
Baltimore & Ohio[1]	2,275,296	2,304,446	11,228,213	9,007,061
Buffalo, Roch. & P.[1 2]	347,260	567,761	2,842,680	2,379,285
Buffalo & Susq.[1 2]	14,721	84,823	447,647	356,667
Chesapeake & Ohio[1]	1,637,214	1,667,628	6,028,035	6,182,102
Erie[2]	218	4,730	28,421	34,896
Hunt. & Br'd T. Mt.[1 2]	77,219	84,515	407,176	322,400
New York Central[3]	333,222	625,387	2,825,987	2,828,593
Norfolk & Western[1 2]	2,117,280	2,200,551	7,861,693	7,615,262
Pennsylvania[1 3]	3,699,928	3,358,062	16,114,420	13,203,746
Pitts. & Lake Erie[1 2]	434,399	647,391	3,525,221	2,384,307
Pitts. Shaw. & North[1 2]	72,747	154,995	864,002	747,093
Virginian[1 2]	342,843	352,750	1,346,660	1,289,733
Western Maryland	271,332	230,273	1,114,564	1,077,261
Total 13 roads	11,623,685	12,283,312	54,634,719	47,426,406
Coke				
Baltimore & Ohio[1]	343,962	289,369	1,240,461	999,974
Buffalo, Roch. & P.[1 2]	17,523	32,717	97,222	133,141
Buffalo & Susq.[1 2]	10,007	44,300	120,866	194,954
Chesapeake & Ohio[1]	36,215	21,421	147,323	65,540
Norfolk & Western[1 2]	86,918	77,572	404,602	287,496
Pennsylvania[1 3]	916,369	832,427	3,616,606	3,136,262
Pitts. & Lake Erie[1 3]	529,535	404,152	1,870,674	1,363,697
Western Maryland	5,308	4,791	29,446	12,992
Total 8 roads	1,945,837	1,706,749	7,527,200	6,194,056

Total Coal and Coke 13 Roads	1914	1915
January	18,157,998	15,685,798
February	15,446,830	13,702,789
March	20,233,213	14,943,124
April	15,497,444	16,070,049
Total, 4 months.	69,335,485	60,401,760

[1] Includes coal received from connecting lines.
[2] Includes company's coal.
[3] Does not include company's coal hauled free.

Note:—The Southern Railway hauled 282,520 short tons of bituminous coal during March, 1914, and 819,682 short tons during the four months ending Apr. 40.

IMPORTS AND EXPORTS

The following is a comparative statement of coal imports and exports of the United States for April, 1914-15, and for the ten months ending March, 1913-14-15, in long tons:

	April		Ten Months		
Imports from:	1914	1915	1913	1914	1915
United Kingdom	442	3,012	9,550	10,133	32,962
Canada	136,480	11[illegible],632	1,181,216	882,772	959,072
Japan	233	4,729	66,497	83,441	72,980
Australia and Tasmania	29,020	13,027	129,985	226,945	154,907
Other countries	.....	321	3,257	3,430	1,828
Total	166,181	137,721	1,389,505	1,206,721	1,221,749
Exports:					
Anthracite					
Canada	392,822	445,118	3,635,117	3,000,205	2,856,321
Argentina	.....	.....	.....	.....	212
Brazil	.....	18	.....	.....	24
Uruguay	.....	.....	.....	84	.....
Other countries	3,438	8,391	66,324	50,077	50,101
Total	395,627	453,527	3,701,441	3,050,366	2,906,858
Bituminous					
Italy	.....	253,273	.....	.....	960,233
Canada	395,627	381,223	9,092,740	9,972,979	6,962,352
Panama	33,073	42,946	395,449	314,467	261,343
Mexico	24,453	32,966	350,201	259,575	338,919
Cuba	63,091	101,013	1,035,110	965,528	882,572
West Indies	56,213	55,055	502,891	481,284	379,015
Argentina	18,966	79,531	.....	118,354	297,328
Brazil	15,831	66,582	.....	212,668	339,597
Uruguay	4,179	36,503	.....	44,671	77,270
Other countries	160,604	63,576	911,299	1,066,061	576,679
Total	772,037	1,112,668	12,285,690	13,435,587	11,075,308
Bunker coal	695,192	655,465	5,976,266	6,449,722	5,686,855

FOREIGN MARKETS

GREAT BRITAIN

June 11—Owing to new restrictions imposed on the export of coal, and the consequent refusal of licences in many cases, the market has for the moment a downward tendency. The output of coal is, however, diminishing. Quotations are approximately as follows:

Best Welsh steam	Nominal	Best Monmouthshires	$7.20@7.44
Best seconds	Nominal	Seconds	6.96@7.20
Seconds	$7.20@7.80	Best Cardiff smalls	5.16@5.40
Best dry coals	7.20@7.80	Cargo smalls	4.44@4.56

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Chartering is very limited in extent owing to export difficulties and rates, while "patchy," are distinctly lower. Rates are approximately as follows:

Gibraltar	$3.84	Naples	$5.40	St. Vincent	$4.80
Marseilles	4.83	Alexandria	5.04	Rio de Janeiro	6.36
Algiers	3.86	Port Said	4.92	Monte Video	5.76
Genoa	5.28	Las Palmas	4.32	River Plate	6.00

Exports—British exports for May and the first five months of the past three years were as follows:

	May			Five Months		
To	1913	1914	1915	1913	1914	1915
Russia	650,197	533,074	10,735	1,442,564	1,304,074	16,139
Sweden	421,843	380,550	320,812	1,744,500	1,408,560	1,342,375
Norway	193,115	214,900	235,309	1,020,284	1,095,44[illegible]	1,156,418
Denmark	208,569	255,938	264,761	1,262,015	1,169,560	1,255,985
Germany	830,610	811,720	.....	3,512,982	3,378,673	.....
Netherlands	167,613	156,244	108,854	879,344	708,952	649,038
Belgium	143,809	145,417	.....	936,095	739,801	.....
France	1,004,259	1,083,502	1,516,157	5,356,675	5,852,799	6,914,199
Portugal[1]	97,106	62,725	81,810	591,756	547,420	44[illegible],940
Spain[4]	295,066	252,185	187,173	1,620,152	1,503,304	893,783
Italy	708,149	849,177	446,608	3,930,725	3,900,684	2,669,021
Aus. Hung.	75,154	74,046	.....	540,652	378,272	.....
Greece	50,984	54,755	36,618	268,309	307,468	187,043
Roumania	25,705	55,533	.....	49,637	131,206	.....
Turkey	10,583	31,816	3,484	57,679	249,191	6,557
Algeria	95,859	125,467	93,963	578,849	535,389	455,014
Portuguese[5]	12,181	2,077	28,933	123,541	88,735	102,068
Chile	82,260	84,105	154	293,818	268,170	22,133
Brazil	120,602	103,701	51,175	851,210	591,307	309,230
Uruguay	44,422	86,014	25,277	298,768	324,274	184,227
Argentine	251,525	291,307	144,211	1,509,586	1,615,571	883,102
Channel Is.	13,071	15,932	8,778	81,919	66,817	53,527
Gibraltar	27,411	10,658	23,380	168,361	156,103	157,848
Malta	28,888	27,162	15,676	341,201	207,528	57,471
Egypt[3]	211,235	278,325	102,420	1,303,316	1,425,024	619,932
Aden[3]	18,121	16,449	13,561	90,196	79,861	60,402
India	13,200	31,043	939	90,987	98,002	12,110
Ceylon	20,155	23,375	14,390	98,535	140,599	31,521
Miscell'ous.	99,175	131,074	50,616	526,169	573,931	289,201
Coke	71,944	75,082	61,299	424,334	444,446	366,996
Briquettes	145,723	186,050	120,564	837,070	852,326	509,471
Total	6,147,614	6,469,463	3,967,657	30,781,229	30,149,490	19,651,751
Bunker	1,618,844	1,840,950	1,180,147	8,366,021	8,500,680	6,334,542

[1] Includes Azores and Madeira. [2] Including Anglo-Egyptian Sudan. [3] And dependencies. [4] And Canaries. [5] West Africa.

Note—The figures in the above table do not include Admiralty and certain other shipments.

Coal Contracts Pending

The purpose of this department is to diffuse accurate information of prospective purchases and prices with a view to affording equal opportunity to all, promoting market stability and inculcating sound business principles in the coal trade.

For the official advertisements of bids wanted see the Contracts-to-Be-Let Section on Page 12.

✚Indicates contracts regarding which official information has been received.

Recast

In the following table we give a list of all old contracts coming up for consideration during the ensuing week. The table gives our contract number, the name of the purchaser, city, tonnage and page on which the detail notice appeared:

No.	Purchaser	City	State	Tonnage	Page
459	Am. Cocoa Butter Co.	Chicago	Ill.	200b[1]	627
545	Ballard & Ballard	Louisville	Ky.	15,000a	708
681	Upper Canada College	Toronto	Can.	1,000b	877
784	William Schuff & Co.	Louisville	Ky.	2 (c a s)[1]	1005
785	The Water & Light Plant	Tupelo	Miss.	4,500b	1005
788	American Varnish Co.	Chicago	Ill.		1005
789	Louisville Hotel	Louisville	Ky.	3,500b	1005
790	Bryant Mfg. Co.	Chicago	Ill.	200c	1005
791	R. E. Wathen	Louisville	Ky.	600,000b	1005
792	Jos. Schwab Distil.	Louisville	Ky.		1005
793	Georgia Ry. & Power	Atlanta	Ga.	50,000b	1005
795	Light & Water Plant	Cullman	Ala.	2,400a	1005
799	Municipal Light Plant	London	Ohio	2,000b	1005
801	Mun. Electric Light Sta.	Henderson	Ky.	9,000b	1005
802	The Bay State Ry. Co.	Boston	Mass.	150,000b	1005
802	The Bay State Ry. Co.	Boston	Mass.	4,000a	1005
803	Board of Education	Jackson	Mich.	750a	1005
803	Board of Education	Jackson	Mich.	980b	1005
805	Light & Water Plant	Caldwell	Kan.	300b	1005
811	The City Government	Chicago	Ill.	123,000b	1006
855	U. S. Engineer	Wilmington	N. C.	13,000b	1085
856	Board of Education	Kansas City	Mo.	2,900a	1085
859	Bd. of Con. & Supply	Syracuse	N. Y.	7,000a	1085
861	Newberry State Hosp.	Newberry	Mich.	6,000b	1085
885	Lighthouse Inspector	Detroit	Mich.		1086
892	U. S. Engineers	Jacksonville	Fla.	7,000	1086
894	Bd. of Pub. Safety	Richmond	Ind.		1086
896	Board of Trustees	Indianapolis	Ind.	1,500	1086
903	Board of Education	Charleston	S. C.	145b	1086

a Indicates anthracite coal. b Indicates bituminous. c Indicates coke.
[1] Per month.

Supplemental Notes

Under this heading additional or supplemental information regarding old contracts appears, together with the page number of the original notice.

✚**No. 624—Providence, R. I.**—Only three bids were received on this contract (p. 795), which provides for furnishing the local Board of Education with about 8500 tons of anthracite coal, and all of these were rejected and the business readvertised. The new bids were opened at noon, June 16, but no advices as to the results have as yet been received. Address School Committee, 32 Summer St., Providence, R. I.

No. 726—New York—Bids on this contract (pp. 916, 955, 1004, 1084 and 1088), calling for 2700 tons of egg coal for the fireboats on the North River and in New York harbor, were reopened on Monday of this week. The bidders and prices were: John F. Schmadeke, $6.16 per ton, total bid, $16,632; William Farrell & Sons, $6.17 per ton, total bid, $16,659. Address Fire Comr. Robert Adamson, Municipal Building, New York City.

✚**No. 801—Henderson, Ky.**—Bids are being advertised for on this contract (p. 1005), which provides for furnishing the local Municipal Electric Light Station with about 9000 tons of slack coal. The old contract was supplied by the People's mines at this place. Address Supt. L. P. Hite, Municipal Electric Light Station, Henderson, Ky.

✚**No. 819—Austin, Tex.**—The requirements on this contract (p. 1048), which provides for furnishing the state charitable institutions with coal, are as follows: 1660 tons of domestic lump or shaker screen coal; 2400 tons nut coal or nut and slack coal mixed; 100 tons of McAlester lump; 420 tons of lignite. The bids may be accepted on any or all of these tonnages. Bids are to cover the cost of delivery to the institutions switch for freight yards, as designated. Deliveries are to be as required. Address State Pur. Agt., Geo. Leavy, Austin, Tex.

New Business

✚**905—Logan, Ohio**—Sealed bids will be received by the local Board of Education until July 2, for furnishing approximately 400 tons of lump coal to be delivered at the various school houses during the ensuing school year. Bidders should specify what kind of fuel they propose furnishing. Address Clk. Herbert R. Harrington, Logan Village School District, Logan, Ohio.

✚**No. 906—Eufaula, Ala.**—The Water and Light Department at this place will be in the market during July or August for approximately 2500 tons of Pratt, mine-run coal. The usual price is about $2.85 delivered in the bins. Address Supt. J. L. Kenny, City of Eufaula Water and Light Dept., Eufaula, Ala.

✚**No. 907—Juniata, Penn.**—The local School Board received bids until 6 p.m. June 21, for furnishing the various schools with approximately 300 tons of coal, deliveries to be completed by July 20. Analysis are to accompany all bids. Address Secy. J. W. Fleck, Juniata School Board, Juniata, Penn.

✚**No. 908—Chicago, Ill.**—The West Chicago Park Commissioners received bids until 4 p.m., June 22, for furnishing and delivering coal during the fiscal year beginning July 1, approximately as follows: 1835 tons of Pocahontas mine-run; 70 tons of Pocahontas lump; 34 tons of anthracite nut; 438 tons anthracite range; 5500 tons Indiana or Illinois screenings. A certified check must accompany all bids. Proposals are to be submitted on forms which may be obtained on application. Address West Chicago Park Commissioners, Union Park, Chicago, Ill.

✚**No. 909—McConnelsville, Ohio**—Sealed proposals were received by the Board of Education, until 9 a.m., June 19, for furnishing the coal requirements of the various buildings of Malta Township. Quotations should be made f.o.b. cars, and bids will also be received for hauling coal to the schools. The successful bidder will be required to give a bond of $100. Address Clk. W. S. Conners, Bd. of Edu. Malta Township, McConnelsville, Ohio.

✚**No. 910—Lincoln, Neb.**—The Local Light and Water Department will be in the market some time during the latter part of July for approximately 9600 tons of Pittsburgh (Kansas) mill and nut coal. The business is done on a competitive basis and the customary price is $3.70 per ton. Address James Tyler, City Water & Light Department, Lincoln, Neb.

✚**No. 911—Cherokee, Iowa**—The Independent School District at this place will receive bids until 7:30 p.m., July 1, for furnishing approximately 300 tons of Illinois Standard lump coal. Deliveries are to be completed on or before Aug. 15. Address Secy. William Shardlow, Independent School District of Cherokee, Cherokee, Iowa.

No. 912—Freeport, Ill.—Bids will be received until noon, June 30, for furnishing approximately 160 tons of Pocahontas coal for the local Court House and Jail. Address H. C. Althoff, Board of Supervisors, Stephenson County, Freeport, Ill.

✚**No. 913—Canonsburg, Penn.**—The local School Board received bids until June 21, for furnishing the fuel requirements for the ensuing year. Address Secy. George H. Challener, Canonsburg, Penn.

✚**No. 914—Fort Dodge, Iowa**—Bids will be received until 7 p.m., July 6, for furnishing the several schools of the local district with coal for a period of one year. Bids should be submitted on lump, mine-run, and steam coal, and an analysis of the coal must accompany all bids. Address Acting Secy. H. M. Pratt, Bd. of Edu., Fort Dodge, Iowa.

✚**No. 915—Oakville, Ont.**—Sealed bids were received until June 21 for furnishing a year's supply of coal for the county buildings of Halton. Address Chn. County Bldg. Com. A. S. Forster, Oakville, Ont.

✚**No. 916—Salem, N. J.**—Sealed bids were received until 7 p.m., June 21, for furnishing the Salem City Water Works at Quinton, with coal during the ensuing year. Proposals should cover both the coal and cost of delivery at the station. Ad-

dress Supt. Charles W. Dunn, City of Salem, Room 6, Dunn Bldg., Salem, N. J.

✚**No. 917—Springfield, Ohio**—The Board of Education at this place will be in the market some time during July or August for approximately 2500 tons of Hocking lump coal which is usually bought at $3.07½ per ton. The call for bids is advertised and the business usually let to local dealers. Address Clk. Wm. H. Holmes, Bd. of Edu., Springfield, Ohio.

No. 918—Kansas City, Mo.—The Kansas City Municipal Water and Light Department will be in the market some time during July or August for approximately 500 tons of lump coal and 20,000 tons of mine-run. The business is usually closed on Cherokee coal for which $3.45 is paid for lump and $2.25 for mine-run. The contract is let on competitive bids. The lump coal is used at the City Hall and must be delivered in wagons while the mine-run is for use at the water and light plant and quotations should be made f.o.b. the plant. Address Pur. Agt. C. W. Lovelace, Kansas Municipal Water and Light Dept., Kansas City, Mo.

✚**No. 919—Pontiac, Mich.**—The Board of Education received bids until 2 p.m., June 22, for supplying approximately 1000 tons of West Virginia threequarter lump coal and 100 tons of anthracite stove and egg sizes. Bids were to include cost of delivery at the schoolhouses during the year ending June 1. A certified check for $100 must accompany all bids. Address Secy. Elmer R. Webster, Bd. of Edu., Pontiac, Mich.

✚**No. 920—Lincoln, Neb.**—Sealed proposals were received at the Board of Commissioners of the state institutions until 10 a.m., June 19, to furnish the fuel requirements of the various institutions for the fiscal year beginning July 1. About 4500 tons will be required at the Hospital for the Insane at Hastings, and 5450 tons at the State Penitentiary. Altogether about 32,000 tons of steam coal will be needed. All bids are required to be accompanied by a certified check for 5% of the amount bid. Address Secy. Leo Matthews, Bd. of Comrs. of State Institutions, Lincoln, Neb.

✚**No. 921—Rensselaer, Ind.**—The county commissioners of Jasper County will receive bids until July 6 for furnishing 400 tons of coal. Address Audr. J. P. Hammond, County Comr. Rensselaer, Ind.

✚**No. 922—New Orleans, La.**—The School Board of this place will receive bids about July 1 for furnishing approximately 2000 tons of both anthracite and bituminous coal for delivery to the 88 school buildings of New Orleans. The gross consideration is between $12,000 and $15,000. Specifications may be obtained on application. Address Purchasing Agent, New Orleans School Board, City Hall Bldg., New Orleans, La.

✚**No. 923—Lansing, Mich.**—Bids will be received by the Michigan School for the Blind until noon, June 29, for furnishing approximately 1500 tons of three-quarter steam lump coal. Bids should include cost of delivery in school bins. Address Supt. C. E. Holmes, Board of Control, Michigan School for the Blind, Lansing, Mich.

No. 924—Indianapolis, Ind.—Bids will be received until July 2 for furnishing the school buildings and the poor of Center Township with coal during the ensuing fiscal year. All bids should include cost of delivery. The bids are wanted on Sullivan No. 6 or Linton No. 4, and on Pocahontas third vein mine-run. Address Trustee, John W. Castor, 311 Saks Bldg., Indianapolis, Ind.

No. 925—Ionia, Mich.—The Board of Supervisors of Ionia County received bids until noon, June 21, for furnishing 200 tons of Pocahontas lump coal. One-half the deliveries are to be made immediately, and the balance during the winter or spring. Address Building Committee, Board of Supervisors, Ionia County, Ionia, Mich.

✚**No. 926—Detroit, Mich.**—The Police Department of this place received bids until 11 a.m., June 22, for furnishing approximately 700 tons of anthracite, stove and egg coal, and 100 tons of chestnut, deliveries to be made during the year beginning July 1. Bids should include cost of delivery in the bins at the various police stations, and the successful bidder will be required to furnish a bond guaranteeing the faithful performance of the contract. Address Secy. of Police, Geo. A. Walters, Detroit, Mich.

✚**No. 927—Shelbyville, Ind.**—The county commissioners of Shelby County will receive bids until July 6 for supplying the court house, jail, orphans home, and county farm with coal during the ensuing year. Address Audr. F. W. Flagel, County Comr., Shelbyville, Ind.

✚**No. 928—Quincy, Ill.**—The Board of Education at this place usually contracts some time during July or August for their annual requirements of coal. The price on the current contract was $2.84 for 4-in. screened lump. The call for bids is not advertised in the papers. Address Business Mgr. Clyde L. Sears, Bd. of Edu., Quincy, Ill.

✚**No. 929—New Orleans, La.**—Sealed proposals were received until June 21, for furnishing the Charity Hospital at this place with its annual requirements of bituminous and anthracite coal. Address Hon. Chas. A. Farwell, Charity Hospital, New Orleans, La.

✚**No. 930—East St. Louis, Ill.**—The Board of Education here contracts either in July or August for their annual requirements of coal amounting to, approximately, 2800 tons. Bituminous lump is ordinarily used, and the current contract is being filled at $1.59¾ per ton. The call for bids is advertised. Address, Board of Education, East St. Louis, Ill.

✚**No. 931—Sharon, Penn.**—The School Board at this place will receive bids until noon, July 6, for furnishing the local schools with coal for the school year beginning Sept. 8. Three-quarter inch coal is required. Address Secy. W. Whitehead, Sharon School Bd., Sharon, Penn.

✚**No. 932—Memphis, Tenn.**—The Board of Education here contracts some time during the summer for their annual fuel requirements amounting to about 2500 tons of pea, slack, nut and mine-run coal. The usual price is about $2.50 per ton. The call for bids is advertised. Address E. S. Conser, Bd. of Edu., 876 Union Ave., Memphis, Tenn.

No. 933—New York—We are informed on reliable authority that the Board of Education will soon request bids for furnishing and delivering 18,000 tons of Buckwheat No. 3, and 6000 tons of semibituminous coal. Official announcement has not yet been made, or any specific dates set for opening the bids. Address Supt. of Supplies, Patrick E. Jones, Bd. of Edu., Park Ave. and 59th St., New York, N. Y.

✚**No. 934—Worcester, Mass.**—Sealed bids will be received until noon, June 28, for furnishing and delivering 3879 tons of anthracite, and 7779 tons of bituminous to various public buildings. A satisfactory bond will be required guaranteeing the faithful performance of the contract. Address Supt. of Public Buildings, Geo. C. Halcott, Room 35, City Hall, Worcester, Mass.

✚**No. 935—New York, N. Y.**—The Department of Docks and Ferries will receive bids until noon, July 2, for furnishing 2000 tons of Buckwheat No. 2. For previous purchases by this department see contract No. 49, p. 149, and No. 373, p. 567. Complete details may be had on application. Address Comr. of Docks, R. A. C. Smith, Pier A, Foot of Battery Place, North River, New York, N. Y.

✚**No. 936—Springfield, Mass.**—Sealed bids will be received until 10 a.m., June 30, for furnishing the House of Correction, Court House, Hall of Records and Training School with coal as follows: Bituminous, 1200 tons; anthracite egg, 80 tons; nut, 10 tons; stove, 30 tons. Address Asst. Clk. Chas. M. Calhoun, Bd. of County Comrs., Springfield, Mass.

✚**No. 937—Amsterdam, N. Y.**—Bids will be received until 1 p.m., June 28, for furnishing the local Public Schools with approximately 900 tons of anthracite grate, egg, stove, chestnut, and pea coal. Bids are to cover cost of delivery in the bins of the several school buildings. Address Clk. Leslie L. Bebb, Bd. of Edu., High School Bldg., Amsterdam, N. Y.

✚**No. 938—Owensboro, Ky.**—Bids will be received until June 28 for furnishing the local public schools with 18,000 bu. of lump or mine-run coal. Deliveries are to be made at Bon Harbor or by rail. Address George H. Cox, Owensboro Public Schools, Owensboro, Ky.

No. 939—Richmond, Mo.—The Missouri Gas & Electric Service Co. at this place is requesting bids for furnishing their fuel requirements during the fiscal year beginning July 1. Clean coal for steaming purposes is required, and bids should include cost of delivery in the bin at the power house. The successful bidder will be required to furnish a bond guaranteeing the fulfillment of the contract. Address Missouri Gas & Electric Service Co., Richmond, Mo.

✚**No. 940—Rochester, Penn.**—The school district of this place will receive proposals until July 1 for furnishing and delivering 4000 bu. of Pittsburgh lump coal to the various school buildings during the ensuing year. Address Secy. Geo. H. Karcher, Rochester School District, Rochester, Penn.

✚**No. 941—Helena, Mont.**—The Board of Education at this place will receive bids until June 26 for furnishing their coal requirements during the ensuing year, which are approximately as follows: Mine-run, 600 tons; No. 2 nut, 600 tons; lump, 50 tons; also an alternative bid on 500 tons of forkings. Deliveries are to be made at the various school buildings during the year beginning Sept. 1. Address Clk. Thos. E. Goodwin, Bd. of Trustees, Room 40, Bailey Block, Helena, Mont.

No. 942—Lafayette, La.—Bids will be received by the Southwestern Louisiana Industrial Institute, until July 1, for furnishing 300 tons of coal. Bidders should submit official B.t.u. tests of their coal. Address Southwestern Industrial Institute, Lafayette, La.

Contracts Awarded

✚**No. 208—St. Peter, Minn.**—This contract (p. 400), which provides for furnishing the local City Government with between 1200 and 1400 tons of coal has been awarded to the **Purity Coal Co.** on range coal at $1.30 per ton f.o.b. cars at the mine. Address Supt. F. N. Wilson, St. Peter Electric Light & Water Works, St. Peter, Minn.

✚**No. 360—Chicago, Ill.**—This contract (p. 566), which provides for furnishing the Acme Steel Goods Co. with its supply during the ensuing year, has been awarded to the **Paradise Coal Co.,** of Du Quoin, Ill., on its 2-in. screenings. Address Pur. Agt. H. H. Onstott, Acme Steel Goods Co., 2834 Archer Ave., Chicago, Ill.

No. 511—Dayton, Ohio—This contract (pp. 665, 748), which provides for furnishing the National Soldiers' Home with about 23,000 tons of coal during the ensuing year has been awarded to **E. A. Cole & Co.** at $2.49 per ton for West Virginia lump. Address Treas. W. H. Ortt, National Military Home, Dayton, Ohio.

✚**No. 585—Washington, D. C.**—The anthracite awards on this contract (pp. 749, 875, 1084), which provides for furnishing coal for various of the Government buildings in the District of Columbia, were as follows:

Butler Building	J. Edward Chapman	Furnace	P. & R.	$5.69
Medical Museum	J. Maury Dove Co.	Furnace	P. & R.	5.73
Lemon Building	J. Maury Dove Co.	Egg	P. & R.	6.29
Ford's Theatre	Commercial Coal Co.	Stove	Mammoth	6.57
Department of Justice	J. Maury Dove Co.	Egg	P. & R.	6.30
Civil Service Commission	J. Maury Dove Co.	Egg	P. & R.	6.35
Geological Survey	L. Edward Chapman	Furnace	P. & R.	5.94
Weather Bureau	J. Edward Chapman	Furnace	P. & R.	5.68
Department of Commerce	J. Edward Chapman	Furnace	P. & R.	5.68
Coast & Geodetic Survey	J. Edward Chapman	Furnace	P. & R.	5.60
Bureau of Fisheries	J. Maury Dove Co.	Egg	P. & R.	6.15
Executive Mansions	W. H. Marlow	Furnace	P. & R.	5.95
Executive Office Building	W. W. Griffith	Furnace	P. & R.	5.95
Greenhouses	J. Maury Dove Co.	Furnace	P. & R.	5.68
Washington Monument	J. Maury Dove Co.	Egg	P. & R.	6.08
Navy Annex	J. Edward Chapman	Furnace	P. & R.	5.73
Soldier's Home	J. Edward Chapman	Stove	P. & R.	6.74
Soldier's Home	J. Edward Chapman	Furnace	P. & R.	5.84
Botanic Garden's	Commercial Coal Co.	Furnace	Mammoth	5.64

No awards have as yet been made for the Hospital for the Insane and for the Government Printing Office. Address Acting Secy. of the Treasury Byron R. Newton, General Supply Committee, Washington, D. C.

✚**No. 617—Kalamazoo, Mich.**—This contract (p. 795), which provides for furnishing the local city government with its coal supply during the ensuing year, has been awarded to **Samuel Buurma,** on nut, pea and slack coal, at $2.44 per ton for deliveries made before Aug. 1, and $2.54 per ton thereafter. The cost includes shoveling in the bin. Address City Clk., C. L. Miller, Kalamazoo, Mich.

✚**No. 659 — Philadelphia, Penn.** — This contract (pp. 836, 1050), which provides for furnishing the Lighthouse Department with coal has had further awards made in addition to those listed last week as follows: **Pennsylvania Coal & Coke Corp.,** bituminous, $2.60 per ton for delivery at Wilmington, Del.; **Charles Warner Co.,** for same delivery anthracite stove $5.90 and nut $6.05. Address Inspector T. J. Rout, 4th Lighthouse Dist., Philadelphia, Penn.

✚**No. 802—Boston, Mass.**—This contract (pp. 1005, 1085), which provides for furnishing the Bay State Street Ry. with about 155,000 tons of steam coal has been awarded to the **Consolidation Coal Co.,** on 95,000 tons of Jenner coal for delivery at Quincy, Lynn, and Chelsea, Mass., and Newport and Portsmouth, R. I. and the balance, about 61,000 tons to the New England Coal & Coke Co. on New River coal to be delivered at Beverly, Mass., and Mystic Wharf, Boston. Address A. P. Emmons, Bay State Ry. Co., 84 State St., Boston, Mass.

✚**No. 803—Jackson, Mich.**—This contract (p. 1005), which provides for furnishing the local Board of Education with about 1700 tons of coal has been awarded to **Collins, Hahn & Dalziel** on the following basis delivered in bin: Anthracite $7.75; Pocahontas lump $5; West Virginia splint 1½ in. lump $2.80; Hocking nut $2.80. This compares with last year's prices as follows: Anthracite $7.75; Pocahontas $5; West Virginia splint $3. Address Supt. Bldg., J. F. Forward, Bd. of Edu. 331 Ten Eyck St., Jackson, Mich.

✚**No. 808—Philadelphia, Penn.**—This contract (p. 1006), which provides for furnishing the Bureau of Charities with coal during July, August and September, was awarded as follows: **Dexter & Carpenter,** 1730 tons of gas coal at $2.68; **Charles S. Sale,** 125 tons of pea coal at $3.95; **Rogers-Corr Coal Co.,** 300 tons of stove coal at $5.89. Address Dir. Herman Loeb, Bureau of Charities, Room 312, City Hall, Philadelphia, Penn.

Contract Notes

Winona, Minn.—The **Western Elevator Co.** was awarded the contract for supplying coal to all the schools next season.

Philadelphia, Penn.—Geo. B. Newton Coal Co., received the award for delivery of white ash buckwheat to the Eastern Penitentiary, at $2.76, and the Rogers-Corr Coal Co., have received from Girard College the award of 9100 tons of the same kind and size of coal at $2.30.

Stearns, Ky.—Thirty cars of block coal, consigned to Toledo, Ohio, for the Lake trade, have been shipped from here by the Stearns Co. This is the first consignment of a contract calling for ninety cars to be delivered in a short time. The mines are operating to capacity on this order.

Boston, Mass.—One of the curious features of the local bunkering situation is that most of the transatlantic steamers lately arriving have been coaled to capacity on the other side and their requirements here are little or nothing; and this in spite of the high prices that prevail over there.

Boston, Mass.—A power-house contract placed this week was divided between New River and a Somerset County (Penn.) coal, the larger tonnage to the latter. This is not exceptional on this particular contract but is shows that Pennsylvania coals are active competitors in this market.

✚**St. Paul, Minn.**—The city purchasing committee last week opened bids on 17,000 tons of various grades of coal. The People's Coal & Ice Company was the lowest bidder on one grade of coal at $4.50 a ton. There were twelve bidders. The bids have been tabulated and referred to the various departments for advice.

Columbus, Ohio—The Hatton-Brown Coal Co., has secured a contract to furnish 100,000 tons of coal to the Atlantic Coast line. The supply of fuel for the company is secured from a number of operators, but the Hatton-Brown Co., was lucky in getting the largest tonnage of any operator on the Norfolk & Western.

Hudson, Mass.—The Mottoquottoc Worsted Co. at this place consumes about 1000 tons of bituminous coal per annum. It seldom contracts but makes its purchases in 300-ton lots which is the amount they have storage capacity for. Deliveries are made by rail. Address J. H. Hancock, Mottoquottoc Worsted Co., Cherry St., Hudson, Mass.

Philadelphia, Penn.—The condition of the anthracite market was clearly reflected at the recent convention of the Pennsylvania Retail Coal Men's Association, at Wilmington, Del., where, before over 900 retail men, President Tattersal, in his speech of acceptance of office, stated that no coal dealer could be considered a good business man who purchased coal at any figure in excess of the April circular.

Birmingham—Contracts totaling at least 1,000,000 tons of steam coal have been closed here recently. The Seaboard Airline contracted for 335,000 tons distributed as follows: Sloss Sheffield Steel & Iron Co., 200,000 tons for the Florida Division; The Alabama Co., 120,000 tons for the Birmingham Division and the Pratt Consolidated Coal Co., 15,000 tons for the Montgomery Division. Among other contracts was one for the Southern Ry. amounting to 500,000 tons. No announcement has yet been made as to the division of this order.

Foreign

Philadelphia, Penn.—Bituminous interests here have recently been in touch with Walter L. Webb who it is understood is representing various Italian interests in the purchase of coal and pig iron. It is stated on good authority that he expects to place orders for coal amounting to not less than 100,000 tons.

Insular Possessions—An American consular officer in one of the insular possessions reports that a business man in his district desires to purchase 500 tons of the best grade of American steaming coal. Shipments are to be by sailing vessel, the consignee to pay all expenses of the vessel while in the foreign port, as well as the costs of unloading. Prices should be made c.i.f. destination. The man states that he requires one shipment per annum of 500 tons of coal.

Amsterdam, Netherland—Press reports are to the effect that the American Consul at this place states that the Nederland Steamship Co., plying between Amsterdam and the Dutch East Indies proposes sending some of these vessels to American ports for coal. It is stated that the coal will be used both on its own steamers and those of the Holland-American line, which formerly coaled at Rotterdam. Holland imports from Germany and Great Britain have become too uncertain to be relied upon.